

100

100

Mildred Russell
St Marys Hospital
Waterbury
Conn

Mildred Russell R.N.

LIPPINCOTT'S
NURSING MANUALS

STATE BOARD QUESTIONS
AND ANSWERS FOR NURSES

By JOHN A. FOOTE, M.D.

HANDBOOK OF OBSTETRICS

By LOUISE ZABRISKIE, R.N., Field Director, Maternity Centre Assoc., N. Y. C.

SURGICAL NURSING

By E. L. ELIASON, M.D., L. KRAEER FERGUSON, M.D., and ELIZABETH KELLER LEWIS, R.N.

ESSENTIALS OF MEDICINE

By CHARLES PHILLIPS EMERSON, M.D., and NELLIE GATES BROWN, R.N.

ESSENTIALS OF CHEMISTRY

By GRETCHEN O. LUROS, B.A.

MATERIA MEDICA NOTE BOOK

By MARY SEWALL, R.N. Fabiola Hospital, Oakland, Calif.

MATERIA MEDICA AND THERAPEUTICS FOR NURSES

By JOHN A. FOOTE, M.D.

NURSING CARE OF COMMUNICABLE DISEASES

By MARY ELIZABETH PILLSBURY. Jewish Hospital, Brooklyn, N. Y.

BACTERIOLOGY APPLIED TO NURSING

By JEAN BROADHURST, Ph.D., and LEILA I. GIVEN, R.N., M.S.

NUTRITION IN HEALTH AND DISEASE FOR NURSES

By LENNA F. COOPER, M.H.E., University of Michigan. EDITH M. BARBER, M.S., HELEN S. MITCHELL, Ph.D. Battle Creek Sanitarium.

STATE BOARD QUESTIONS AND ANSWERS FOR NURSES

By JOHN A. FOOTE, M.D.

CARE AND FEEDING OF INFANTS AND CHILDREN

By WALTER REEVE RAMSEY, M.D.

SURGICAL AND GYNÆCOLOGICAL NURSING

By EDWARD MASON PARKER, M.D., and SCOTT DUDLEY BRECKINRIDGE, M.D.

PHYSICS AND CHEMISTRY FOR NURSES

By A. R. BLISS, Jr., M.D., and A. H. OLIVE, Ph.D.

PRACTICAL BANDAGING

By ELDRIDGE L. ELIASON, A.B., M.D.

FIRST AID IN EMERGENCIES

By ELDRIDGE L. ELIASON, A.B., M.D.

ESSENTIALS OF SURGERY

By ARCHIBALD L. McDONALD, M.D. St. Luke's Hospital, Duluth, Minn.

HOW WE RESIST DISEASE. *An Introduction to Immunity.*

By JEAN BROADHURST, Ph.D.

BACTERIA IN RELATION TO MAN

By JEAN BROADHURST, Ph.D.

NURSING TECHNIC

By MARY C. WHEELER, R.N.

MENTAL HYGIENE AND THE PUBLIC HEALTH NURSE

By V. MAY MacDONALD, R.N.

SIMPLIFIED NURSING

By FLORENCE DAKIN, R.N.

NURSING MENTAL AND NERVOUS DISEASES

By ALBERT C. BUCKLEY, M.D.

APPLIED PSYCHOLOGY FOR NURSES

By DONALD A. LAIRD, Assistant Professor of Psychology, University of Wyoming.

LIPPINCOTT'S NURSING MANUALS

STATE BOARD QUESTIONS AND ANSWERS FOR NURSES

BEING THE ACTUAL QUESTIONS SUBMITTED
AT THE EXAMINATIONS OF 31 STATE EXAMIN-
ING BOARDS FOR NURSES, WITH ANSWERS

COMPILED AND EDITED BY
JOHN A. FOOTE, M.D.

PROFESSOR OF PÆDIATRICS; ONE-TIME ASSISTANT PROFESSOR OF THERAPEUTICS
GEORGETOWN UNIVERSITY MEDICAL SCHOOL, AND PÆDIATRIST TO
CHILDREN'S HOSPITAL, WASHINGTON, D. C. AUTHOR OF
MATERIA MEDICA AND THERAPEUTICS FOR NURSES

NINTH EDITION
REVISED, ENLARGED



PHILADELPHIA AND LONDON
J. B. LIPPINCOTT COMPANY

COPYRIGHT, 1917, 1919, 1924, 1926, 1927, 1928, 1929, 1930, BY
J. B. LIPPINCOTT COMPANY
COPYRIGHT, 1931 BY J. B. LIPPINCOTT COMPANY

PRINTED IN UNITED STATES OF AMERICA

PREFACE TO THE NINTH EDITION

AN ENTIRELY new revision of the classification of subjects in this book has been completed in the volume. The older system of alphabetical grading has, in most subjects, been displaced by subject headings of closely related information. In previous editions some duplicate questions were retained in order that the student might know that certain questions were asked in more than one classified department; as for example questions on physiological chemistry which appear under general nursing, under chemistry and also under dietetics. In order not to make the volume too unwieldy as to bulk, and to provide room for the several hundred new questions and answers compiled from 1929 and 1930 examinations in 19 States, which have been incorporated in the text of this revision, the author and editors have deemed it wise to eliminate all such duplicate questions and answers, excepting when Newer Type questions ask for information already found in the essay type of questions and answers previously indexed in the volume.

The new work has been entirely reindexed, a great many new cross indices as well as new indices added, and, of course, entirely reset.

We offer it with confidence to the nursing profession as an excellent aid to the teacher, and not as a substitute for the textbook.

The author wishes to acknowledge his gratitude to Dr. Ella Oppenheimer and Dr. Philip Caulfield for aid and assistance in editorial revision, and especially to Dr. Elizabeth Chickering, to whose patience and ability a great deal of this revision is due. Finally to the publishers, the J. B. Lippincott Company, for enthusiastic support.

J. A. F.

January, 1931

PREFACE

THE questions included in this volume have been compiled from the actual examination papers submitted to candidates for the title Registered Nurse in thirty-one states. Their publication here has been made possible through the courtesy of the secretaries of these various examining boards, and their compilation was facilitated by the generous assistance of several members of the nursing profession. The writer is especially grateful to Miss Laura McHale, Superintendent of Nurses of Freedman's Hospital, Washington, D. C., for aid in preparing the answers on "Dietetics," and to the Sister Superintendent of Nurses, of Providence Hospital, Washington, D. C., for general assistance and valuable aid in the answers on "General Nursing" and "Ethics."

Because some examining boards differed from others in classifying their questions under definite group headings, some repetitions of questions will be found. For instance, many papers on Nursing contained questions on Urinalysis, while others grouped such questions under a separate heading. Practically all of the questions included here appeared several times—some of them were found in nearly every list of the hundreds of papers examined and utilized. For this reason the writer believes that this volume may be looked upon as a fairly typical condensation of the kind of knowledge the State Examiners believe the trained nurse should possess in order to properly practice her profession. It may be found of value, therefore, as a guide to study by the student, as well as a guide for the direction of study by the teacher. It is in no sense a text-book. Instead the writer refers the reader to the following authoritative works which were of great value in preparing the text:

"Practical Nursing," Pope and Maxwell; "Lippincott's New Medical Dictionary"; "Materia Medica and Therapeutics," Foote; "Nurses' Handbook of Obstetrics," Cooke; "Surgical and Gynecological Nursing," Parker and Breckinridge; "How to Cook for the Sick," Sachse; "Essentials of Medicine," Emerson; "Prenatal Care," West, Bulletin 4, U. S. Children's Bureau; "Infant Feeding and Care," Bulletin 8, U. S. Children's Bureau; "Simplified Infant

Feeding," Dennett; "Private Duty Nursing," Dewitt; "Nurses' Handbook of Medicine," Henry; "Anatomy and Physiology," Bundy; "Dietetics," Pope and Maxwell; "Introduction to Physiology," Porter.

J. A. F.

CONTENTS

MATERIA MEDICA AND THERAPEUTICS

	PAGE
Abbreviations.....	1
Definitions.....	4
Origin, Action, Uses.....	10
Dosage.....	15
Excessive Dosage.....	20
Administration.....	21
Anæsthetics.....	32
Cathartics.....	33
Digitalis.....	35
Narcotics.....	37
Miscellaneous.....	40
Poisons and Antidotes.....	44
Solutions.....	48
Weights and Measures.....	57

ANATOMY

Bone and Cartilage.....	65
Joints.....	74
Muscles.....	76
Respiratory Organs.....	80
The Heart and Blood-vessels.....	82
The Lymphatic System and Glands.....	87
Ductless Glands.....	89
Organs of Digestion.....	89
Genito-urinary Organs.....	94
The Nervous System and Organs of Special Sense.....	96
Definitions and Miscellaneous.....	101

PHYSIOLOGY

Digestion.....	113
Respiration.....	117
Heart and Blood-vessels.....	119
Blood.....	123
Elimination.....	126
Muscles.....	128
Heat and Metabolism.....	129
Nerves and Special Senses.....	130
Urinalysis.....	141

HYGIENE AND BACTERIOLOGY

Personal Hygiene.....	155
General Hygiene and Public Hygiene.....	161
Foods.....	167
Ventilation and Heating.....	171

	PAGE
Plumbing and Drainage.....	174
Bacteria.....	174
Infection and Transmission.....	185
Tests.....	190
Immunity, Immunization, Serums, Vaccines.....	192
Disinfection.....	196
Fumigation.....	199

GENERAL NURSING OF MEDICAL DISEASES

Definitions.....	200
Synonyms.....	206
Symptoms and Signs.....	215
Definitions.....	215
Temperature.....	215
Pulse.....	216
Respiration.....	217
Convulsions.....	218
Coma.....	219
Edema.....	219
Excreta.....	219
Fever.....	220
Hæmorrhage.....	221
Vomiting.....	222
Miscellaneous.....	223
Nursing Measures and Procedures.....	224
Baths.....	224
Beds.....	229
Catheterization.....	230
Clinical Chart.....	231
Dry-cupping.....	232
Compresses.....	232
Disinfectants.....	232
Douches.....	233
Enemata and Colonic Irrigations.....	233
Gavage and Lavage.....	237
Hot-water Bag and Ice Bag.....	238
Hypodermic Injections.....	239
Irrigation.....	241
Massage Heat Light.....	242
Poultices.....	242
Salt Solution.....	243
Stupes.....	245
Miscellaneous.....	246
Procedures.....	252
Medical Diseases.....	253
Heart Diseases.....	253
Diseases of Blood.....	255
Acute Rheumatic Fever.....	255
Gastrointestinal Diseases.....	256
Endocrine Glands.....	258
Diabetes.....	259
Diseases of Kidneys and Bladder.....	261
Diseases of Nervous System.....	264
Communicable Diseases.....	266
Definitions Terms General Measures.....	266

CONTENTS

xi

	PAGE
Chicken-pox	275
Mumps	276
Measles	276
Diphtheria	278
Scarlet Fever	281
Typhoid Fever	284
Pneumonia	290
Empyema	294
Pulmonary Tuberculosis	294
Tularemia and Psittacosis	296
Acute Poliomyelitis and Epidemic Meningitis	296
Small-pox	297
Complications	298
Venereal Diseases	298

SURGICAL NURSING

Definitions	307
Asepsis, Antisepsis, Disinfectants, Antiseptics, Sterilization	314
Bandages and Dressings	319
Instruments	321
Sutures	322
Anæsthesia	323
Operations	327
Post-operative Nursing Measures	331
Catheterization	337
Infusion Transfusion Hypodermoclysis	339
Shock and Post-operative Complications	341
Inflammation and Infection	344
Hæmorrhage	345
Appendicitis	347
Burns	347
Gangrene	348
Erysipelas	348
Phlebitis	349
Tetanus	349
Wounds	350
Fractures Dislocations Trauma Etc.	352

ORTHOPÆDIC SURGERY	363
--------------------------	-----

GYNÆCOLOGICAL NURSING

Anatomy and Physiology of the Female Generative Organs	371
Definitions	373
Examination and Operation	376
Instruments	378
Douches	378
Gynæcological Diseases and Nursing Measures	381

OBSTETRICAL NURSING

Definitions	395
Prenatal Care	398
Pregnancy	400
Labor	406

	PAGE
Postpartum Care.....	411
Care of the Breasts.....	415
The Infant.....	418
Complications of Labor and Puerperium.....	424

PÆDIATRIC NURSING

Definitions.....	435
The New-Born.....	438
Development and Teething.....	439
Feeding.....	441
Diet in Older Children.....	449
Digestive Disorders, Gastrointestinal Diseases, Nutritional Diseases.....	450
Stools.....	450
Constipation.....	452
Diarrhoea.....	452
Diseases—Gastrointestinal and Nutritional.....	455
Nursing Measures.....	458
Respiratory Diseases.....	464
Diseases of Eye, Ear, Nose and Throat.....	467
Skin Diseases.....	471
Nervous and Mental Diseases.....	472
Infections and Communicable Diseases.....	474
Medical and Surgical Nursing—Miscellaneous.....	476

DIETETICS

Food Elements and Definitions.....	485
Cooking and Care of Food.....	494
Meats and Fish.....	500
Milk Water Etc.....	502
Serving of Food.....	507
Special Diets.....	507
Diarrhoea.....	520
Constipation.....	520
Beverages and Broths.....	521
Food Preservation and Miscellaneous.....	525

NURSING ETHICS AND HISTORY OF NURSING

Ethics.....	535
History.....	557

CHEMISTRY AND PHYSICS..... 569

PSYCHIATRIC AND NEUROLOGICAL NURSING

Definitions and Terms.....	589
Diseases and Nursing Measures.....	599

THE NEWER TYPES OF QUESTIONS

General Statement with Examples.....	617
A. Completion Types of Questions.....	619
Anatomy and Physiology.....	619
Pædiatric.....	625

	PAGE
Medical and Mental Nursing and Contagious Diseases.....	630
Communicable Diseases.....	632
Materia Medica and Therapeutics.....	634
Hygiene and Bacteriology.....	637
Urinalysis.....	641
Dietetics.....	642
Surgical Nursing.....	646
Obstetrics and Gynæcology.....	648
Ethics and History of Nursing.....	649
B. True—False Type.....	650
Anatomy and Physiology.....	650
Materia Medica.....	650
Bacteriology and Hygiene.....	650
General Nursing.....	651
Pædiatrics.....	652
Dietetics.....	653
Obstetrics.....	653
Ethics and History of Nursing.....	653
C. Selection Type.....	654
Anatomy and Physiology.....	654
Materia Medica.....	655
Bacteriology and Hygiene.....	656
Medical Nursing and Mental Diseases.....	656
Pædiatrics.....	658
Dietetics.....	659
Obstetrics.....	659
Ethics and History of Nursing.....	659
D. Numerical Selection Type.....	660
Practical, Surgical and Medical Nursing.....	660
Obstetrics.....	661
Ethics and History of Nursing.....	662

INDEX.....	669
------------	-----

STATE BOARD QUESTIONS AND ANSWERS FOR NURSES

MATERIA MEDICA AND THERAPEUTICS

ABBREVIATIONS

For what do the following abbreviations stand? bd.; stat.; p.r.n.; q.s.; q.4.h.; gtts.; s.o.s.?

bd. or b.i.d.,	bis in die,	twice a day.
stat.,	statim,	immediately.
p.r.n.,	pro re nata,	when needed.
q.s.,	quantum sufficiat,	a sufficient quantity.
q.4.h.,	quaque 4 horæ,	every four hours.
gtt.,	gutta or guttæ,	a drop or drops.
s.o.s.	sic opus sic,	if necessary.

What do the following abbreviations stand for? a.c.; t.i.d.; p.c.; tr.; ung.; fl.?

a.c.,	ante cibum,	before food.
t.i.d.,	ter in die,	thrice daily.
p.c.,	post cibum,	after a meal.
tr.,	tinctura,	a tincture.
ung.,	unguentum,	an ointment.
fl.,	fluidus,	fluid.

Write the Latin for the following abbreviations and give their meaning in English: ad.; ā.ā.; c.c.; comp.; s.s.; gr.

ad.,	addo,	up to.
ā.ā.,	ana,	of each.
c.c.,		cubic centimetre.
comp.,	compositus,	compound.
s.s.,	semissis,	a half.
gr.,	granum or grana,	a grain, or grains.

Write in full for these abbreviations: O.; aq.; dest.; pulv.; mist.; c.; Sig.

O.,	octarius,	a pint.
aq.,	aqua,	water.
dest.,	destilla,	distilled.
pulv.,	pulvis,	a powder.
mist.,	mistura,	a mixture.
c.,	cum,	with.
Sig.,	signa,	let it be written.

Write in full: ad lib.; div.; ext.; F.; pil.; Ft.; gm.; No.

ad lib.,	ad libitum,	as desired.
div.,	dividatus,	divide.
ext.,	extractum,	an extract.
F.,		Fahrenheit.
pil.,	pilula,	pill.
Ft.,	fiat,	let it be made.
gm.,		gram.
No.,	numero,	number.

Give abbreviations for: "every other night"; "as you please"; "one-half"; "ounce"; "scruple."

every other night,	alt. noct.
as you please,	ad lib.
one-half,	s.s.
ounce,	℥
scruple,	℥

Write the English equivalent for the following abbreviations:

P. R. N.—Stat.—P. C.—A. C.—T.i.d.—Q. 3 hr.

The English equivalent for

P.r.n. is as may be needed.

Stat. is at once.

P. c. is after food.

A. c. is before food.

T.i.d. is three times a day.

Q. 3 hr. is every 3 hours.

Define: (a) Materia medica, (b) Therapeutics.

Materia medica is the study of the natural and commercial history of drugs, their physical and chemical properties and doses.

Therapeutics treats of the action of medicines in relieving or curing disease.

What is a drug?

A drug is any raw material used to compose or compound a medicine.

What is meant by an official drug?

An official drug is a drug which is included and described in the United States Pharmacopœia.

What are specific drugs? Name three.

Specific drugs are drugs which have a special curative effect on certain diseases.

Mercury or salvarsan in syphilis.

Quinine in malaria.

Diphtheria antitoxin in diphtheria.

Name three liquid and three solid official preparations.

Liquid	{	Aromatic spirit of ammonia.
		Tincture of nux vomica.
		Fluidextract of cascara sagrada.
Solid.....	{	Powder of ipecac and opium
		(Dover's powder).
		Mass of mercury (blue mass).
		Compound cathartic pills.

Give the common name for the following Latin official names of drugs, with their therapeutic use and their dosage:
Dextrosum, liquor epinephrinæ hydrochloridi, liquor sodæ chlorinatæ chirurgicæ, quinidine sulphas.

Dextrosum is dextrose or crystallized glucose. Uses, for intravenous injection in shock, dehydration, etc. Dose variable according to needs.

Liquor epinephrinæ hydrochloridi is adrenalin solution. Uses, for local vaso-constriction and as a circulatory stimulant. Dose 8 minims (0.5 c.c.)

Liquor sodæ chlorinatæ chirurgicæ, Dakin's solution. Used locally.

Quinidine sulphas is quinidine sulphate. Uses, in auricular fibrillation. Dose 5 grains (0.3 gm.)

4 STATE BOARD QUESTIONS AND ANSWERS

Give common name and dose of magnésium sulphate, potassium and sodium tartrate, tinctura opii camphorata, liquor potassii arsenitis. What precaution should be observed in administering the latter drug?

Magnesium sulphate, Epsom salt, one-half of an ounce.

Potassium and sodium tartrate, Rochelle salt, one-fourth of an ounce.

Tinctura opii camphorata, paregoric, two teaspoonfuls.

Liquor potassii arsenitis, Fowler's solution, ten minims.

In giving Fowler's solution the dosage must be started at the minimum and gradually increased.

Give common names for the following: oleum ricini, oleum terebinthinæ, hydrargyri chloridum mite, spiritus frumenti, spiritus vini gallici, oleum tiglii.

The common name of oleum ricini is castor oil.

The common name for oleum terebinthinæ is oil of turpentine.

The common name of hydrargyri chloridum mite is calomel.

The common name of spiritus frumenti is whiskey.

The common name of spiritus vini gallici is brandy.

The common name for oleum tiglii is croton oil.

Give the common or trade names for the following Latin official names of drugs and give the average dose of each in apothecaries' system and metric system: Amidopyrina, acidum acetylsalicum, arspenamina, barbitonum.

Amidopyrina is pyramidon, dose 5 grains (0.3 gm.)

Acidum acetylsalicum is aspirin, dose 5 grains (0.3 gm.)

Arsphenamina is arsenobenzol or salvarsan or 606, dose 6¼ grains (0.4 gm.)

Barbitonum is diethylbarbituric acid, or veronal, dose 8 grains (0.5 gm.)

Give technical names for cod liver oil, salt and calomel.

The technical name for cod liver oil is oleum morrhuæ.

The technical name for salt is sodii chloridi.

The technical name for calomel is hydrargyri chloridum mite.

Define the following: cathartic, anodyne, hypnotic, diaphoretic, emmenagogue, expectorant, mydriatic.

A cathartic is a medicine which, taken internally, produces copious evacuation of fluid intestinal contents.

An anodyne is a remedy which relieves pain.

A hypnotic is a medicine which produces sleep.

A diaphoretic is a remedy which induces perspiration.

An emmenagogue is a remedy which induces or stimulates the menstrual flow.

An expectorant is a drug used to promote secretion of mucus.

A mydriatic is any drug which dilates the pupil.

Define: antipyretics, narcotics, sedatives.

Antipyretics are remedies that reduce fever.

Narcotics are drugs that cause extreme depression of the brain resulting in stupor.

Sedatives are remedies that produce a calm and quiet condition of the body, or of some portion of it, as "heart sedatives."

Define antispasmodic, counter-irritant, germicide.

An antispasmodic is a drug which relieves spasmodic attacks.

A counter-irritant is a drug which reddens or blisters the skin when applied locally.

A germicide is an agent which will effectually destroy germs.

Define alterative, anthelmintic, aperient, hæmostatic, galactagogue and give an example of each.

An alterative is a drug used with the purpose of changing or stimulating body tissues to a healthy reaction. Iodide of potassium is an alterative.

An anthelmintic is a drug used to kill intestinal worms. Santonine is an anthelmintic.

An aperient is a saline laxative of mild action. Example: sodium phosphate.

A hæmostatic is a drug used to control hæmorrhage, usually external hæmorrhage. Example: alum.

A galactagogue is a drug intended to increase the secretion of milk. Pilocarpine is believed to be a galactagogue.

Define infusions, tinctures, antiseptics, antidotes.

Infusions are preparations made by extracting the properties of vegetable substances with hot water. Example, tea.

Tinctures are preparations of vegetable drugs, not weaker than 10 per cent., made by extracting the properties of the drug with an alcoholic liquid. Example, tinct. opium.

6 STATE BOARD QUESTIONS AND ANSWERS

Antiseptics are drugs which prevent contagion or sepsis.
Example, mercuric chloride.

An antidote is a remedy used to counteract the effect of a poison. An antidote is chemical when it acts by combining chemically with the poison in the stomach and rendering it **less** soluble (as chalk in oxalic acid poisoning), or physiological, when it opposes the constitutional effects of the poison with an opposite physiological action (as the use of chloral in strychnia poisoning).

Define refrigerants, sudorifics.

A refrigerant is an agent that induces sensations of coolness—usually a saline aperient.

A sudorific is a drug that induces perspiration.

Give common name for muriatic acid.

The common name for muriatic acid is hydrochloric acid.

What is a placebo?

A placebo is a medicine given to please or gratify the patient.

Give common name for hexamethylenamin.

The common name for hexamethylenamin is urotropine.

(a) What alkaloid substance is derived from coffee? (b) What is the common name for phenol?

(a) Caffeine, a basic substance, is derived from coffee.

(b) The common name for phenol is carbolic acid.

Name one diuretic, hypnotic and diaphoretic.

Theobromine sodium salicylate (diuretin) is a diuretic. Veronal is a hypnotic. Powder of ipecac and opium, Dover's powder, is a diaphoretic.

Name five emetics; five alteratives.

Mustard, sodium chloride, apomorphine, ipecac, and sulphate of copper are emetics.

Potassium iodide, mercury protoiodide, colchicum seed, sarsaparilla, arsenous acid, are alteratives.

Name two expectorants and give the dose of each.

Wine of ipecac, 15 minims.

Iodide of potassium, 15 grains.

Differentiate between laxative and cathartic; anodyne and hypnotic; diaphoretic and diuretic; escharotic and rubefacient; emollient and demulcent.

A cathartic has a strong purgative action, a laxative has a mild purgative action.

An anodyne is a remedy that relieves pain; an hypnotic is a remedy that induces sleep. A diaphoretic is a remedy that induces or increases perspiration; a diuretic increases the quantity of urine secreted.

An escharotic destroys and cauterizes tissue; a rubefacient acts as a counter-irritant to the skin. An emollient has a soothing action when applied topically, as to the skin; a demulcent has a lubricating and soothing action locally, usually applied to its action when taken by mouth.

What is an emulsion?

An emulsion is a suspension of finely divided oil, fat, or resinous globules, in an aqueous fluid, usually containing a mucilaginous material.

What is a liniment? What is the intended effect of a liniment? What is lime liniment and why is it an exception?

Liniments are oily liquids for external use, intended to be applied with friction. They are designed to produce a counter-irritant effect and promote massage. Lime liniment, or carron oil, is a mixture of lime-water with cottonseed oil or linseed oil. It is intended to have a protective and sedative action, and is not a counter-irritant.

Explain the difference between hypnotic and sedative. Give an example of each.

A sedative is a drug which allays excitement, such as sodium bromide. A hypnotic is a drug which induces sleep, such as chloral hydrate.

What is Hoffman's anodyne?

Hoffman's anodyne is compound spirit of ether.

8 STATE BOARD QUESTIONS AND ANSWERS

Define the following and name three of each: astringent, carminative, demulcent, tonic.

An astringent is an agent that causes contraction of the body tissues and arrests secretion. Acetate of lead, chloride of iron and tannic acid are astringents.

A carminative is a drug causing a feeling of warmth in the stomach and the expulsion of flatus. Aromatic spirit of ammonia, spirit of chloroform and oil of peppermint are carminatives.

A demulcent is a remedy which has a sedative action on the mucous membrane of the alimentary tract.

Acacia, tragacanth and linseed are demulcents.

A tonic is a remedy which increases the functional activity of the body or any of its organs.

Strychnia, iron, and caffeine are tonics.

Define diuretic.

A diuretic is a medicine which causes the passage of a large amount of urine.

Define emetic; name one and give its dosage.

An emetic is a drug used to produce vomiting. Syrup of ipecac is an emetic when used in dosage of $\frac{1}{2}$ ounce.

Name two emetics easily procured in a household.

Mustard and salt.

Define catharsis.

Catharsis is the vigorous and copious evacuation of the bowels produced by the action of a cathartic.

Define serum therapy, radiology, hydrotherapy.

Serum therapy is the treatment of certain diseases with curative sera.

Radiology is the study of the use of the radio-active agents in the diagnosis and cure of disease.

Hydrotherapy is the use of water in various modifications, as a curative agent in disease.

What are alkaloids? Name two and state their source. Are all alkaloids alkalis?

Alkaloids are organic substances, frequently the active principles of vegetable drugs, which have alkaline properties, and unite, like ammonia, with acids to form salts.

Morphine is an alkaloid derived from opium.

Strychnine is an alkaloid derived from nux vomica.

All alkaloids are alkalis in their chemical behavior.

Define purgative.

A purgative is a medicine which causes satisfactory fluid evacuation of the intestines.

What is an extract, fluidextract, spirit, syrup, mixture?

An extract is a concentrated preparation of a drug.

A fluidextract is a liquid which represents an exact amount of the drug.

A spirit is a solution of a volatile substance in alcohol.

A syrup is a sweet, watery solution of one or more drugs.

A mixture is a liquid containing more than one drug, one of which may be insoluble.

State briefly the difference between vaccines and serums.

Serums are the blood serum of animals that have been rendered immune to a certain disease by the injection of gradually increasing amounts of bacterial toxin or dead bacteria, which causes antitoxic substances to be formed. Serums produce passive immunity in man or animals when injected.

Vaccines are suspensions of cultures of dead bacteria which when injected into a living organism produce an active immunity against infection with similar live bacteria.

What is meant by idiosyncrasy? Name two drugs in which this action is not uncommon.

An idiosyncrasy is a peculiarity which renders certain individuals susceptible to unusual reactions which do not occur in other individuals. Iodides and iodine may produce such a reaction, and also belladonna.

What is bromism?

Bromism is the complex of symptoms produced by chronic bromide poisoning. It is characterized by drowsiness or apathy,

acne-like eruptions of the skin, physical and mental torpidity and disturbed digestion.

ORIGIN—ACTION—USES

How are drugs classified regarding their origin?

Drugs according to their origin are divided into: (a) organic and (b) inorganic drugs.

The organic drugs are subdivided into (1) drugs from the vegetable kingdom and (2) drugs from the animal kingdom.

Name three drugs which come from the animal kingdom.

Name three drugs which come from the mineral kingdom.

Name three drugs which come from the vegetable kingdom.

Pepsin, thyroid and insulin are derived from the animal kingdom.

Iron, silver and mercury salts are derived from the mineral kingdom.

Senna, cascara and belladonna are derived from the vegetable kingdom.

Mention five therapeutic agents of animal origin and give one use for each.

<i>Name</i>	<i>Use</i>
Thyroid gland	In hypothyroidism.
Suprarenal gland	As an external hæmostatic.
Pepsin	As a gastric digestant.
Pancreatin	As an intestinal digestant.
Insulin	In the treatment of diabetes.

What is meant by (a) untoward effect, (b) systemic effect?

(a) The untoward effect of a drug is the unusual or toxic effect of ordinary doses or the absence of response in large doses.

(b) The systemic effect of a drug is its action upon the body as a whole as a result of its circulation in the blood stream.

From what portion of the pancreatic gland is insulin derived? Who discovered it?

Insulin is extracted from the Islands of Langerhans, a collection of internal secreting glands in the pancreas. It was discovered by Dr. Banting of Toronto.

Why is it necessary for a nurse to know the physiological action of a drug?

The nurse must know the physiological action of a drug if she would have a rational knowledge of its action in combating the symptoms of disease, and make intelligent observations of its effects.

What do you understand by the physiological action of a drug? The therapeutic action of a drug?

The physiological action of a drug is the action which the drug has on the normal animal.

The therapeutic action of a drug is the action which the drug may have in combating a disease or its symptoms.

What is meant by the cumulative action of a drug?

A sudden development of toxic symptoms of a drug after numerous and repeated small doses have been taken is called a "cumulative action"—on the supposition that the drug accumulates through a defect in the normal ratio of absorption and excretion.

What is a cumulative drug? Name one and detail its cumulative action.

A cumulative drug is one having a cumulative action. Digitalis is a cumulative drug. When taken in sufficient doses over a long period, digitalis may suddenly cause a very slow and intermittent pulse, nausea and sometimes vomiting, and a sensation of great bodily weakness. This will be recognized as the cumulative action of digitalis.

What is meant by the limit of tolerance of a drug? Give three examples.

The limit of tolerance for a drug is reached when the beneficial effects of the remedy, if any, have reached their maximum, and a toxic action has begun to assert itself. (See "Therapeutic limit.")

Examples: The production of nausea and extreme slowing of the heart when digitalis has been given beyond the limit of tolerance. The production of œdema of the eyelids when arsenic has been given beyond the limit of tolerance. The production of involuntary muscular twitchings when the limit of tolerance for increased dosage of strychnia has been reached.

Give some of the physiological actions of morphine.

On the nervous system morphine depresses the sensory areas of the cerebrum, thus abolishing the perception of pain, and the thinking processes. It slightly stimulates the spinal cord. It depresses the respiratory centre in the medulla; also the vaso-constrictor centre.

Circulation—a slight dilation of superficial blood-vessels occurs. There is no direct action on the heart.

Alimentary canal: a spasm of the pylorus is caused by morphine. After absorption morphine is excreted by the stomach and intestine from the blood. An impairment of peristaltic action and secretion in the stomach and intestine follows the use of morphine in man.

Name three drugs which act on the kidneys.

Name three drugs which act on the skin.

Name three drugs which act on the brain and nerves.

Name three drugs which act on the heart.

Digitalis, squill and theobromine stimulate the kidneys.

Arsenic, mercury and potassium iodide act on the skin (alterative action in syphilis).

Caffeine, strychnia and coca stimulate the nervous system, especially the spinal cord (caffeine the brain also).

Digitalis and strophanthus stimulate the heart; aconite depresses it.

Name two drugs that reduce temperature, and tell what this class of drugs is called.

Phenacetin and acetanilid reduce fever. This class of drugs is called the antipyretics.

Name a drug which has emetic properties, expectorant properties, sedative properties, astringent properties, anæsthetic properties.

Ipecac and apomorphine have emetic properties.

Ammonium carbonate and squill have expectorant properties.

Sodium bromide and chloral have sedative properties.

Tannic acid and adrenalin have astringent properties.

Ether and cocaine hydrochloride have anæsthetic properties.

Name and give usual dose of a drug having the following properties: (a) narcotic, (b) hypnotic, (c) heart stimulant.

Morphine sulphate is a narcotic; the dose is $\frac{1}{6}$ grain.

Chloral hydrate is a hypnotic; the dose is 10 grains.

Caffeine and sodium benzoate is a heart stimulant; the dose is 2 grains.

Name several therapeutic agencies and drugs affecting metabolism and nutrition.

Thyroid, epinephrin, pituitary and parathyroid are drugs which affect metabolism and nutrition. Heat, cold, exercise and sunshine are therapeutic agencies which affect metabolism and nutrition.

Name a medicine used to kill intestinal round worms in children. To treat tapeworm.

Santonine is used to kill the round worm in a dosage of $\frac{1}{2}$ to 1 grain for a five year old child, given fasting and followed by a saline purgative or calomel. Tapeworm is treated by giving a single dose of 25 minims of oleoresin of male fern. The patient should have been fasting for twelve hours and the medicine should be given in a capsule followed by a saline purgative.

State physiological action of (a) luminal, (b) paraldehyde.

Luminal and paraldehyde are both hypnotics.

Name one drug which acts on the following: (a) stomach, (b) intestinal tract, (c) blood, (d) respiration, (e) female genital organs

(a) A drug which acts upon the stomach is hydrochloric acid.

(b) A drug which acts upon the intestinal tract is aloes.

(c) A drug which acts upon the blood is iron cacodylate.

(d) A drug which acts upon the respiration is caffeine.

(e) A drug which acts upon the female genital organs is ergot.

What are the differences in clinical results of the following drugs when dropped in the eye; cocaine, atropine, homatropine, eserine?

Cocaine has a brief mydriatic action, the effect of pupillary dilatation lasting only a few minutes and the muscles of accom-

modation not being paralyzed. Atropine dilates the pupil and paralyzes accommodation for from one to several days, by paralyzing the motor fibres of the third nerve. Homatropine has the same action, but the effect passes away inside of 24 hours. Eserine causes contraction of the pupil, and is the physiological antagonist of atropine.

Name a drug that (a) causes dilatation of the pupil, (b) causes contraction of the pupil.

- (a) Atropine sulphate causes dilatation of the pupil.
- (b) Morphine sulphate causes contraction of the pupil.

What is the action of (a) atropine? (b) chloroform?

Atropine stimulates the motor area of the cerebrum and paralyzes the end-fibres of the secretory nerves, the pneumogastric and the motor-oculi nerves. As a result, secretion of the salivary, mucous, sweat and milk glands is lessened, the pupil of the eye is dilated and accommodation is lost. Spasm of the intestines is lessened and the splanchnic blood-pressure as well as the general blood-pressure is raised by a stimulating action on the vaso-constrictor centre. A compensatory dilation of the vessels of the face causes flushing. The respiratory centre in the medulla is stimulated by atropine.

Chloroform quickly depresses and paralyzes the sensory areas of the brain, next the motor areas, and last the medullary centres. It has a directly paralyzing action on heart muscle and is a general protoplasmic poison, causing, under certain conditions, a fatty degeneration of the liver. It produces rapid and profound, but dangerous anæsthesia. The blood-pressure falls rapidly under chloroform, due to a depression of the centre as well as an action on the heart muscle. The respiratory centre is depressed or paralyzed by chloroform.

Veronal acts quickly or slowly? Why? Alcohol acts quickly or slowly? Why?

Veronal acts slowly, because it is sparingly soluble and is not absorbed in the stomach.

Alcohol acts rapidly because it is very diffusible and is absorbed in the stomach.

(a) What is ergot? (b) How does it act in moderate doses? (c) How does it act in large doses? (d) What may occur after long-continued use of ergot?

(a) Ergot is a fungoid growth which occurs on rye. It contains one or more alkaloids.

(b) In moderate doses it raises the blood-pressure by stimulating the vaso-constrictor centre in the medulla, and also by a direct action on the smooth muscles of the blood-vessels themselves. This tonic action on smooth muscles of the blood-vessels accounts for its effect in producing contractions of the uterus.

(c) In large doses it causes a marked rise in blood-pressure and may occasion nausea and vomiting.

(d) Long-continued use may cause gangrene of the extremities, especially in the aged.

Name two inorganic or mineral acids. Name two organic or plant acids.

(a) Sulphuric and hydrochloric are two mineral acids.

(b) Acetic and citric are two plant acids.

What is hydrochloric acid? Give its action and uses.

Hydrochloric acid is an acid made up chemically of equal parts of hydrogen and chlorine. It is also known as muriatic acid. It is found normally in the human gastric juice and is therefore used in medicine to aid gastric digestion when the gastric secretion is diminished in quantity or quality. Applied to the tissues in its pure state it is decidedly caustic. It is used in medicine chiefly in the form of the diluted hydrochloric acid, the dilution being about one part of the acid to three of water. This is given well diluted and through a tube in doses of from 10 to 30 minims after food.

DOSAGE

What regulates the dosage of medicines?

Dosage is modified and is greater or lesser according to:

(a) Age and weight, females requiring smaller doses than males, and the young and very old requiring smaller doses than the adult.

(b) Disease: causing larger or smaller doses than the average.

(c) Personal peculiarities and habits of life may so modify the action of drugs as to require smaller or larger doses.

(d) The method of administering modifies dosage. Taking the dose given by mouth as normal we may safely say that the hypodermic or intravenous method requires one-third less and the rectal method twice as much as the dosage by mouth.

What is a generally accepted rule for calculating dosage for children under twelve years of age?

Young's rule for fractional dosage in children under twelve years of age is as follows:

Make a fraction using the age of the child as the numerator and the age plus 12 as the denominator.

Example: a child 4 years of age should receive $\frac{4}{4 + 12}$ or $\frac{4}{16}$ or $\frac{1}{4}$ of the adult dose.

Knowing the dose of medicine for an adult, what proportion would you give a child one year old and to a child less than 6 months old? Give rules.

Applying Young's rule in which the age of the child is taken as the numerator and the age plus 12 as the denominator of a fraction, we have the following:

$1/12 + 1 = 1/13$ of the adult dose.

A child less than six months old should be weighed exclusive of clothing. Make a fraction with the weight of the child as the numerator and 200 as the denominator. Example: a child weighs 10 pounds. The fraction $10/200$ or $1/20$ adult dose represents the dosage for a child of this weight (Foote). These rules do not apply to opiates, when less must be given, or to purgatives, when more is required.

How much strychnine sulphate would you give a four-year-old child, if the adult dose is gr. $1/40$?

According to Young's rule the dose will be gr. $1/160$.

If the adult dose is thirty grains, how many grains would you give a 6-year-old child?

Applying Young's rule we would make a fraction, the numerator of which will be the child's age, 6, and the denominator, the

age plus 12, or 18. $\frac{6}{18} = \frac{1}{3}$. The dose should therefore be $30 \times \frac{1}{3}$ or 10 grains.

Compare the doses by rectal, hypodermic and mouth medication.

Taking the dose by mouth as the standard, the dose by hypodermic is one-third less and by rectum twice as much as normal dose by mouth.

Give the adult doses of the following drugs: hyoscin, morphine, digitalis.

The dose of hyoscin is gr. 1/100.

The dose of morphine is gr. 1/6.

The dose of digitalis is gr. i.

Give the dose and use of the following: nitroglycerin, pilocarpin and apomorphine.

Nitroglycerin,	gr. 1/100,	vaso-dilator.
----------------	------------	---------------

Pilocarpin,	gr. 1/60,	diaphoretic.
-------------	-----------	--------------

Apomorphine,	gr. 1/10,	emetic.
--------------	-----------	---------

Give dose of croton oil, and tell how best to administer it.

Give dose of tincture of iron and tell how best to administer it.

Croton oil is given in a dose of one drop mixed with several drops of sweet oil and dropped on the tongue.

Tincture of chloride of iron is given in dosage of ten minims, well diluted with water and taken through a glass tube.

Give doses of the following preparations: morphine sulphate and camphorated tincture of opium.

Morphine sulphate is given in dosage of grain $\frac{1}{4}$.

Camphorated tincture of opium is given in dosage of fldr. ii.

What is the adult dose of the following drugs: cocaine hydrochloride, atropine sulphate, heroin hydrochloride?

Cocaine hydrochloride, gr. $\frac{1}{2}$.

Atropine sulphate, gr. 1/100.

Heroin hydrochloride, gr. 1/12.

Give the average adult dose of luminal.

Luminal gr. $1\frac{1}{2}$.

State the dose of each of the following drugs: (a) caffeine, (b) trional, (c) camphor, (d) hyoscin.

(a) Caffeine—dose, gr. ii.

(b) Trional—dose, gr. xv.

(c) Camphor—dose, gr. i to gr. iii.

(d) Hyoscin—dose, gr. $1/50$.

Give the usual dosage and action of the following: codeine, salol, santonine, menthol.

Codeine, grains $\frac{1}{2}$, analgesic.

Salol, grains v, anti-rheumatic.

Santonine, grains i, anthelmintic.

Menthol, grains ii, carminative, antiseptic and inhalant.

What is the dose and effect of (a) tr. digitalis, (b) turpentine, (c) croton oil, (d) tr. nux vomica, (e) phenacetin, (f) ammonium chloride?

(a) Dose m x to xv. Acts as a crutch to a disabled heart, giving a firmer, slower heart-beat.

(b) Turpentine internally m ii to iv; externally $\mathfrak{z}$ i to a pint of hot water, applied locally as stupe to relieve flatulence.

(c) Croton oil, m i to iii. Drastic purgative.

(d) Tr. nux vomica, m iii to xvi, as a tonic in stomach and intestinal conditions.

(e) Phenacetin, gr. viii, to reduce temperature and control pain.

(f) Ammonium chloride, gr. vii, to increase bronchial secretion.

What is the ordinary dose of urotropin?

The ordinary dose of urotropin, or hexamine is 10 grains taken in water three times daily.

Name two preparations of nux vomica and give the dose of each.

Tincture of nux vomica, dose 10 minims; extract of nux vomica, gr. $\frac{1}{6}$.

What is the adult dose of tincture of iron?

The average dose of tincture of chloride of iron is ten minims.

Give the average dose of aspirin, Fowler's solution.

Aspirin, gr. x, Fowler's solution, m.iii.

Give minimum and maximum dose of strychnine, sodium bromide and bichloride of mercury.

Strychnine, 1/60 to 1/20 grain.

Sodium bromide, 10 to 30 grains.

Bichloride of mercury, 1/32 to 1/5 grain.

What is meant by the therapeutic limit of a drug?

The therapeutic limit of a drug is the stage reached in dosage when slight toxic symptoms begin to appear.

Give minimum and maximum doses of chloral, morphine, atropine.

Chloral hydrate: Minimum dose 3 grains, t.i.d.

Maximum dose, 25 grains.

Morphine sulphate: Minimum dose $\frac{1}{16}$ grain.

Maximum $\frac{1}{2}$ grain.

Atropine sulphate: Minimum dose $\frac{1}{250}$ grain.

Maximum $\frac{1}{30}$ grain.

Give ordinary dose of fluidextract of ergot, veronal, sodium bromide and compound licorice powder.

The ordinary dose of fluidextract of ergot is 15-60 minims.

The ordinary dose of veronal is 5 grains.

The ordinary dose of sodium bromide is 15 grains.

The ordinary dose of compound licorice powder is 1 dram.

Give the dose of oleum morrhuae.

The dose of oleum morrhuae is one tablespoonful.

What symptoms are the indications for discontinuing the following drugs: Fowler's solution; potassium bromide?

The symptoms for discontinuing Fowler's solution are puffiness and cedema of the eyelids.

For discontinuing potassium bromide are mental hebetude, skin eruptions, impairment of digestion and a fine tremor of the hands.

What is salivation? Name two drugs that sometimes cause it.

Salivation is an excessive flow of saliva occurring in certain diseases such as stomatitis and bulbar palsy by reflex nervous action, or brought about through the action of drugs—as large doses of pilocarpin, or in the chronic mercurial poisoning caused by calomel.

What symptoms should you look for when giving large doses of calomel and iodide of potash?

Cumulative symptoms of calomel: sore gums and teeth, stomatitis, metallic taste, loose teeth, drooling of saliva.

Cumulative symptoms of iodide of potash: coryza, conjunctivitis, rhinitis, skin eruptions.

What untoward symptoms would you watch for in giving digitalis?

When digitalis is taken for too long a period, or in excessive doses, it produces cumulative symptoms. The symptoms of cumulation are a small, slow, and intermittent pulse, accompanied by a feeling of weakness and faintness and sometimes nausea and vomiting. The production of these symptoms is favored by gastritis or constipation.

What is meant by iodism?

Iodism is a term used to describe the train of symptoms, such as malaise, frontal headache, coryza, lacrymation, pharyngitis, acne, etc., which follow prolonged overdosage with iodine or its salts.

What are the symptoms of chronic overdosing with mercury? Give treatment.

The symptoms of chronic mercurial poisoning, or salivation, are tenderness in the gums and alveolar processes, stomatitis, loose teeth, drooling of saliva, loss of appetite, eruptions, diarrhoea, etc.

The treatment consists in withdrawing the mercury, administering saline purgations, treating the mouth with astringent lotions and giving small doses of the iodides to aid elimination.

What are symptoms of overdosage with arsenic?

If a single very large dose is given the symptoms are those of an irritant poison, vomiting, abdominal cramps, collapse, rice-water stools and suppression of urinary secretion. If only a fairly large dose is used for a considerable period of time gastric disturbance and a marked œdema of the eyelids may occur.

What are the indications for discontinuing the following drugs: strychnia, quinine, iodide of potassium, sodium salicylate?

<i>Name of drug</i>	<i>Untoward effects</i>
Strychnia	Increased reflex excitability, sudden starts, convulsive movements.
Quinine	Marked ringing in ears, earache, dermatitis.
Iodide of potassium	Coryza, frontal headache, acne.
Sodium salicylate	Erythema, tinnitus, nausea, delirium.

Give the dose and toxic symptoms of strychnia. What is the physiological antidote?

Strychnia, usually given as the sulphate or the nitrate, is given in the average dose of 1/40 grain.

Toxic symptoms are shown by stiffness in the muscles of the neck, contractions of the facial muscles often resulting in a grinning expression, and marked convulsions frequently arching the body (opisthotonos). Death usually results from exhaustion and tetanic contraction of the respiratory muscles.

The physiological antidote is chloral hydrate and chloroform. The chloral is given by rectum in double doses.

ADMINISTRATION

(a) Name six ways of giving medicine. (b) By which method will you get the quickest action?

(a) Medicine may be given by mouth, by rectum, by hypodermic injection, by intravenous injection, by inunction, by inhalation.

(b) The method of intravenous injection gives most rapid action.

Name five points to observe in the care of medicines in a medicine closet.

(1) The closet should be located in a dark cool place when possible to prevent excessive drying and evaporation.

(2) All bottles, boxes and packages should be properly labeled.

(3) The closet should be locked to prevent access to it by children.

(4) Poisons, such as carbolic acid and bichloride of mercury tablets, should be kept on a separate shelf, the highest in the closet. All poisons should bear a *poison* label.

(5) Dry preparations such as powders and tablets should be separated from liquids. Prescriptions for internal use should be separated from other containers.

Give five important rules in administering medicine.

(1) Read directions carefully and note dosage.

(2) Use accurate graduates for drachms and minims.

(3) Identify medicine as proper, before and after administering.

(4) Dilute irritating solutions, and give iron and acid solutions through a tube.

(5) Always give medicines exactly on time.

What rule should a nurse observe to avoid mistakes when giving medicine?

A nurse should refuse to be distracted by conversation or in any other way when giving medicine, and should read the label and identify the medicine three times before trying to administer it.

I desire a prompt effect of a medicine which may be administered either in solution, powder or compressed tablet form; which is preferable and why?

The method of giving in solution is preferable if a prompt effect is desired, as a solution is absorbed more quickly.

Why are medicines sometimes given hypodermically? Name some medicines commonly given in this way.

Medicines are given hypodermically when a prompt action is desired. Morphine, strychnine, caffeine, nitroglycerin, eserine, pilocarpin and other alkaloidal salts and soluble potent drugs are given in this way.

Name three drugs which are commonly given by rectum.
Sodium bicarbonate, glucose and chloral hydrate.

(a) State two main purposes for which drugs are administered. (b) Give an example of each.

(a) The two main purposes for which drugs are administered are (1) to cure disease and (2) to alleviate symptoms.

(b) An example of a drug which cures disease is quinine which is a specific in malaria. A drug which alleviates symptoms is morphine which is administered to relieve pain.

Name three important medicinal treatments developed during the 19th and 20th centuries.

1. Arsenic in the treatment of syphilis.
2. Diphtheria antitoxin in treatment of diphtheria.
3. Insulin in treatment of diabetes.

Give the four essential points of a prescription or an order for a drug.

The four parts of a prescription are:

1. Superscription.
2. Inscription.
3. Subscription.
4. Signature.

Translate into English the following:

R Magnesii sulphatis	℥i
Tinct. nucis vom.	℥i
Aq. menth. pip. qs. ad.	℥vi
Ft.M. Sig: ℥i 4 hrs.	

Take of

Epsom salt one ounce.

Tincture of nux vomica one fluidrachm.

Peppermint water a sufficient quantity to make six ounces.

Make a mixture.

Write: One teaspoonful every four hours.

When minims are ordered why may a drug not be measured by drops?

Because a drop varies in size and weight with the viscosity and specific gravity of the liquid, while the minim, at ordinary temperature, is an invariable measure of capacity.

When and how should iron, arsenic and potassium iodide be administered? Why?

Soluble iron preparations should be given well diluted after meals, and the acid preparations, such as the tincture of ferric chloride, should be given through a tube.

Arsenic should be given after meals, well diluted or followed by a draught of water.

Potassium iodide should be given $2\frac{1}{2}$ or 3 hours after meals well diluted.

Soluble iron preparations are irritating to the stomach and may stain and corrode the teeth unless given as above.

Arsenic is also irritating to the stomach.

Iodides may be decomposed by the free hydrochloric acid in the stomach, and so are best given at a time when the acid is most likely to be combined with food.

In administering acids, why should they be given diluted and through a tube?

Because they are very corrosive to the enamel and dentine of the teeth. The giving of acids properly diluted and through a tube limits this corrosive action to the minimum.

Mention one medicine that should always be given through a glass tube.

Hydrochloric acid should always be given through a glass tube and well-diluted with water.

What precautions would you use in giving tr. ferri chloridi, or other solutions containing iron?

To give after food, not closely after tea, well diluted, and through a tube. The mouth should be rinsed afterward.

For what purpose is iron given?

Iron is given in various forms of anæmia, especially the secondary anæmias, with the purpose of increasing the number and especially the hæmoglobin content of the red cells.

In giving ether by mouth what precautions should be observed?

The ether should be dropped on sugar and followed by a swallow of iced water.

How would you administer urotropin?

Urotropin is given with acid sodium phosphate in order to secure acidity of the urine.

Name a drug which acts as an intestinal astringent.

Bismuth subcarbonate is an intestinal astringent.

Name two medicines that are often given in ascending doses.

Iodide of potassium and Fowler's solution are nearly always ordered to be given in increasing doses.

How are salol, quinine and phenacetin usually administered and why?

Salol and quinine, because of their disagreeable taste, are usually administered in pill or capsule form.

Phenacetin is more frequently given in tablet or powder, as its taste is not so objectionable.

Name six important drugs or medicines that an industrial nurse should have in her emergency cabinet, and state the therapeutic use of each.

Tincture of iodine, or 2 per cent. solution of mercurochrome—local antiseptic for cuts.

Aromatic spirit of ammonia. Reflex heart stimulant to be inhaled or given by mouth in syncope.

Alcohol. Local antiseptic and cleansing agent for cuts, abrasions, and preparation of operative field.

Solution of cocaine hydrochloride, or novocaine, as a local anæsthetic, as for foreign bodies in eye, etc.

Argyrol in solution, or capsules to make 10 per cent. solution, as a non-irritating mucous membrane antiseptic for infected eyes, coryza, etc.

Camphorated tincture of opium, as an anodyne for pain and colic.

What drugs are employed as antiseptic washes?

Argyrol, boric acid, borax, bichloride of mercury, permanganate of potash, to mention only a few.

Mention three drugs or preparations used externally in preparing a patient for a major operation.

Tincture of iodine, alcohol, sterile water.

If ordered to apply tincture of iodine to the skin, how would you make the application? If smarting continued after the skin had dried, how would you relieve it?

Tincture of iodine should be painted on the skin with a camel's hair brush or a gauze or cotton sponge. If smarting continues after drying, wash off the surface with alcohol.

Give name, composition and method of application of preparation which is used extensively for sterilizing the field of operation.

For sterilizing the field of operation a diluted tincture of iodine is extensively used. It is a 7 per cent. solution of iodine in alcohol, mixed with an equal quantity of alcohol. It is painted on the dry skin, no water or soap having been used on the part for the previous twelve hours.

Make a list of five drugs which should be found in the home medicine cabinet.

Milk of magnesia.

Boric acid.

Sodium bicarbonate.

Iodine.

Acetyl salicylic acid.

Name two preparations of mercury and give method of administration of each.

Two preparations of mercury are calomel (hydrargyri chloridum mite) and blue ointment (unguentum hydrargyri).

Calomel is administered by mouth. Blue ointment is administered by inunction.

What types of medicines should be given A. C.? What types should be given P. C.?

Medicines intended to act on the mucous membrane of the stomach, that is, intended for local action or to promote appetite or gastric secretion, should be given A. C. or before meals.

Medicines intended for general action, and particularly if they contain substances irritating to the gastric mucosa, should be given P. C. or after meals.

Mention three means by which medicinal agents may be applied either to the skin or to the mucous membrane.

Medicinal agents may be applied to the skin or mucous membrane in powder, ointment or solution.

What strength solution of creolin is usually prescribed for vaginal douche?

One teaspoonful to a quart is a solution frequently prescribed as a vaginal douche.

What are the uses of the mustard bath?

The mustard bath is used as a mild general counter-irritant to the skin, stimulant to the general circulation, and sedative to the nervous system. It is frequently used in children's diseases accompanied by convulsions or circulatory disturbance.

Prepare a mustard plaster for a baby one week old and state when such a plaster is used.

For a baby a week old make a paste with water of one tablespoonful of powdered mustard and eight of flour; spread this between two layers of thin muslin and apply. This is frequently used in bronchitis and pneumonia.

How is cantharides used, and how would you apply it and care for its result?

Cantharides is used in the form of a plaster on the skin for the purpose of producing the extreme result of counter-irritation—a blister. Before applying the plaster, the skin should be washed with alcohol, and carefully dried, having first removed any hairs present by shaving. The blister should be covered by oiled silk or rubber tissue held in place by adhesive strips or bandage. About four hours is usually more than sufficient time for blistering to occur. Remove the plaster carefully, and if the blister has not risen, apply a poultice.

If the blister has not broken, protect it with cotton. If it has, cleanse it carefully with solution of boric acid and apply a dressing of sterile gauze covered with sterilized vaseline, using the same precautions as in dressing a wound.

Describe the process of giving a mercurial inunction.

Cleanse the skin with soap and water, using a flexor surface of an extremity as the elbow, the groin, etc. Take the pre-

28 STATE BOARD QUESTIONS AND ANSWERS

scribed amount of ointment and, with a rubber glove on the hand, rub in a firm and gentle manner on the patient's skin till absorbed. Take different site for each application, allowing a week to elapse before the same portion of the skin is used twice.

Name two methods by which the reliability of drugs and medicines is guaranteed to the medical profession and the public.

The laying down of standards of purity by the United States Pharmacopœia and their enforcement by State and National pure-food and drug laws are two methods by which drug purity is guaranteed to the medical profession and the public.

In case of shock what drugs could you give on your own responsibility?

Whiskey or aromatic spirit of ammonia by mouth; coffee and salt solution by rectum.

Describe method for giving hypodermic injections.

(See "Hypodermic injections," Medical Nursing.)

If you were told to give morphia gr. $\frac{1}{8}$ and had gr. $\frac{1}{2}$ what would you do?

As $\frac{1}{2}$ is $\frac{4}{8}$, then $\frac{1}{8}$ is $\frac{1}{4}$ of $\frac{1}{2}$. To dissolve the $\frac{1}{2}$ grain tablet in 24 minims of water and give $\frac{1}{4}$ of it, or 6 minims, would be the proper procedure.

Give atropine sulphate gr. $\frac{1}{100}$ having tablets gr. $\frac{1}{120}$, outlining your method.

Taking two tablets of $\frac{1}{120}$ gr. together they will give $\frac{1}{60}$ grain. To get $\frac{1}{100}$ from $\frac{1}{60}$ gr. we will find the least common denominator which is 600. $(100 \quad \frac{100}{1} \quad \frac{600}{6} \quad 100 \times 1 \times 6 = 600)$ $\frac{1}{100} = \frac{6}{600}$. $\frac{1}{60} = \frac{10}{600}$. To get $\frac{1}{100}$ (or $\frac{6}{600}$) out of $\frac{1}{60}$ (or $\frac{10}{600}$), we will take $\frac{6}{10}$ of a given quantity of water in which the two $\frac{1}{120}$ gr. tablets are dissolved. For example, dissolving the two $\frac{1}{120}$ gr. tablets in 30 minims of water and multiplying $30 \times \frac{6}{10}$ we will find that $\frac{180}{10}$ or 18 minims of the solution will contain $\frac{1}{100}$ gr.

Give strychnia sulphate gr. $\frac{1}{60}$ having tablets gr. $\frac{1}{40}$.

The least common denominator is 120. $(20 \quad \frac{40}{2} \quad \frac{60}{3} \quad 20 \times 2$

$\times 3 = 120$) $1/60 = 2/120 : 1/40 = 3/120$. The fraction is $\frac{2}{3}$. Dissolving the $1/40$ tablet in 30 minims of water and multiplying by $\frac{2}{3}$ we will find $30 \times \frac{2}{3}$ or $60/3$, or 20 minims of the solution contains $1/60$ grains of strychnia.

Give strychnia sulphate gr. $1/25$ from a solution in which 10 minims = $1/30$ grain.

The common denominator is 150. $1/25 = 6/150 : 1/30 = 5/150$. $1/25$ is $6/5$ of $1/30$. Multiplying 10 by $6/5$, 10 minims $\times 6/5$ equals $60/5$ or 12 minims of the solution of strychnia, which will contain the required dose.

How would you obtain gr. $1/6$ morph. sulph. if you have only tablets gr. $1/4$?

The common denominator of $\frac{1}{6}$ and $\frac{1}{4}$ is 12. ($2 \frac{\frac{6}{3} \frac{4}{2}}{2} 2 \times 3 \times 2 = 12$) $\frac{1}{6} = 2/12 : \frac{1}{4} = 3/12$. $\frac{1}{6}$ is, therefore, $\frac{2}{3}$ of $\frac{1}{4}$. Dissolving the gr. $\frac{1}{4}$ tablet in 30 minims of water we will take $\frac{2}{3}$ of this ($\frac{2}{3}$ of 30) or 20 minims, to obtain the required gr. $\frac{1}{6}$.

If told to give gr. $1/150$ of strychnine by hypodermic and only tablets gr. $1/30$ were available how would you prepare the dose?

The common denominator is 150. ($30 \frac{\frac{30}{1} \frac{150}{5}}{5} 30 \times 1 \times 5 = 150$.) $1/30$ is $5/150$ or $5 \times 1/150$. Dividing the tablet of $1/30$ by 5 would therefore give $1/150$ gr. The tablet gr. $1/30$ is dissolved in 60 minims of water and $\frac{1}{5}$ of this quantity, or 12 minims, is taken for injection. This contains $1/150$ grain.

How would you give a child $1/100$ of a grain of morphine sulphate hypodermically if only $\frac{1}{4}$ grain tablets were available?

The common denominator is 100. ($4 \frac{\frac{4}{1} \frac{100}{25}}{25} 4 \times 1 \times 25 = 100$.) $\frac{1}{4} = 25/100$. $25/100$ is therefore 25 times the dose of $1/100$. Dissolving the $25/100$ gr. tablet in 250 minims, and taking $1/25$ of this, or 10 minims, will give $1/100$ gr. of morphine.

Dissolve $\frac{1}{4}$ grain of morphine sulphate in 20 c.c. of water; how many c.c. of the solution would you give your patient to give $\frac{1}{16}$ grain each dose?

$\frac{1}{4}$ of $\frac{1}{4}$ grain is $\frac{1}{16}$ grain. If $\frac{1}{4}$ grain is found in 20 c.c., $\frac{1}{16}$ grain would be found in $\frac{1}{4}$ of 20 c.c. or 5 c.c. of the solution.

30 STATE BOARD QUESTIONS AND ANSWERS

How would you give atropine gr. $\frac{1}{100}$ from a 2 per cent. solution?

Two per cent. means 2 parts in 100 or 1 part in 50. Every minim, therefore, contains about $\frac{1}{50}$ of a grain, or every 10 minims contains $\frac{1}{5}$ of a grain. To obtain $\frac{1}{100}$ of a grain, which is $\frac{1}{20}$ of $\frac{1}{5}$ of a grain, take $\frac{1}{20}$ of 10 minims. To do this the more easily add 10 minims of solution to 50 minims of water and take $\frac{1}{20}$ of this or three minims.

You are ordered to give morphine gr. $\frac{1}{30}$ and you have gr. $\frac{1}{8}$; how will you give it?

The common denominator is 240. $\frac{1}{8} = \frac{30}{240}$ and $\frac{1}{30} = \frac{8}{240}$. To get $\frac{1}{30}$ from $\frac{1}{8}$ you would take $\frac{8}{30}$ of the tablet. To do this dissolve the tablet in 60 minims of water. $\frac{8}{30} \times 60/1 = 16$ minims.

If you have atropine sulph. gr. $\frac{1}{150}$ and you want grain $\frac{1}{100}$, how will you give it?

The common denominator is 300. ($50 \frac{\frac{150}{3} \frac{100}{2}}{2} 50 \times 3 \times 2 = 300$.) $\frac{1}{150} = \frac{2}{300}$. $\frac{1}{100} = \frac{3}{300}$. $\frac{1}{100}$ is therefore in relation to $\frac{1}{150}$ as $\frac{3}{300}$ is to $\frac{2}{300}$ or 3 to 2. 3 halves of a tablet of $\frac{1}{150}$ gr. would therefore contain $\frac{1}{100}$ grain. Two tablets dissolved in 24 minims of water would give you four halves. $\frac{3}{4}$ of this solution, $\frac{3}{4} \times 24$, or 18 minims of the solution of 2. $\frac{1}{150}$ gr. tablets, will give $\frac{1}{100}$ grain.

Give atropine sulphate gr. $\frac{1}{150}$, using tablet gr. $\frac{1}{100}$.

300 is the common denominator of 100 and 150. $\frac{1}{150}$ gr. is therefore $\frac{2}{3}$ of $\frac{1}{100}$ gr. Dissolve one $\frac{1}{150}$ gr. tablet in 30 minims of water, and take $\frac{2}{3}$ of 30, or 20 minims of the solution. This will contain $\frac{1}{150}$.

How will you give strychnia sulphate gr. $\frac{1}{60}$ when you have on hand tablets containing gr. $\frac{1}{50}$?

The denominator of 50 and 60 is 300. ($10 \frac{\frac{50}{5} \frac{60}{6}}{6} 10 \times 5 \times 6 = 300$.) $\frac{1}{50} = \frac{6}{300}$. $\frac{1}{60} = \frac{5}{300}$. $\frac{1}{60}$ is therefore $\frac{5}{6}$ of $\frac{1}{50}$. Dissolve the tablet containing $\frac{1}{50}$ of a grain in 30 minims of water, and take $\frac{5}{6}$ of this solution, or ($\frac{5}{6} \times 30 = 25$) 25 minims to get $\frac{1}{60}$ of a grain.

Reduce $1/20$ to per cent.; $1/500$ to per cent.; $1/1000$ and $1/5000$ to per cent.

$1/20$ is $5/100$ or 5 per cent. $1/500$ is $2/1000$ or $2/10$ of 1 per cent. or 0.2 per cent. $1/1000$ is $1/10$ of 1 per cent. or 0.1 per cent. 1 to 5000 is $1/50$ of 1 per cent. or 0.02 per cent.

If a doctor orders atropine gr. $1/300$ and you have in supply gr. $1/150$, how will you give the dose?

300 is the multiple of 300 and 150. $1/150 = 2/300 : 1/300$ is $1/2$ of $2/300$. Dissolve, therefore, the tablet of $1/150$ gr. in 30 minims of water and take one-half of that quantity, or 15 minims, to obtain $1/300$ gr.

If a doctor orders calomel gr. i to be given in 5 doses and you have on hand tablets containing gr. $1/10$, how many will you give at one time?

Gr. i given in five doses would require $1/5$ gr. at a dose. $1/5 = 2/10$. Since we have tablets of gr. $1/10$, two should be given at each dose.

If ordered to give gr. $1/120$ of strychnia, and you have a tablet of gr. $1/30$, how many doses have you?

$1/30 = 4/120$: therefore you have four doses.

A solution marked "minims x = gr. $1/3$ "; how would you give a dose of gr. $1/5$?

The common denominator of $1/3$ and $1/5$ is 15. ($3 \frac{1}{1} \frac{3}{5} 3 \times 1 \times 5 = 15$.) $1/3 = 5/15$; $1/5 = 3/15$. $1/5$ is therefore $3/5$ of $1/3$. If 10 minims contains $1/3$, $3/5$ of 10 minims, or 6 minims will contain gr. $1/5$.

If you are told to give $1/30$ gr. of strychnine and you had only $1/60$ gr. tablets, how would you prepare the dose?

$1/30$ is equal to $2/60$. Two tablets, therefore, should be given.

If told to give gr. $1/30$ of morphia and only tablets of gr. $1/4$ were at hand, how would you prepare the dose?

The common denominator 60 is used. $1/30 = 2/60$; $1/4 = 15/60$. $1/30$ is therefore $2/15$ of $1/4$.

Dissolve the tablet of gr. $1/4$ in 60 minims of water. Take $2/15$ of 60, or 8 minims of this solution to obtain $1/30$ grain.

If m.v. equal gr. $\frac{1}{150}$, how many m. will be required to make a dose of gr. $\frac{1}{60}$?

We have the proposition:

$5 : \frac{1}{150} :: x : \frac{1}{60}$, or $\frac{1}{150} x = \frac{5}{60}$, or reducing further, $x = \frac{750}{60}$ or $12\frac{1}{2}$ m. Since $\frac{1}{2}$ a minim cannot be measured, dilute the solution with an equal part of water, and take 25 minims, to obtain gr. $\frac{1}{60}$.

From a solution of chloral hydrate in which 1 dram equals 10 grains, give 8 grains.

8 is $\frac{4}{5}$ th of 10, therefore the dose of chloral hydrate will be $\frac{4}{5}$ th of a dram, or 48 minims.

ANÆSTHETICS

What are anæsthetics? In what two ways are they most generally used? Give an example of each.

Anæsthetics are drugs which when administered have the power to abolish sensation or consciousness. They may be used to abolish sensation in one part of the body, local anæsthetics, or to produce general loss of consciousness and sensation, general anæsthetics. Local anæsthetics are most frequently applied by hypodermic injection, general anæsthetics by inhalation.

Cocaine is a local anæsthetic; ether is a general anæsthetic.

Name three general anæsthetics.

Ether, nitrous-oxide and chloroform.

What is the danger of ether anæsthesia? What is the danger of chloroform anæsthesia?

The danger of ether anæsthesia is respiratory collapse.

The danger of chloroform anæsthesia is cardiac collapse.

From what are chloroform and ether derived? Compare them.

Ether and chloroform are both derived from alcohol; ether by an oxidation process being ethyl oxide, chloroform by the insertion of a chlorine radical, chloroform being trichlorethane.

Chloroform is much the stronger and more rapid anæsthetic agent of the two and therefore the more toxic. It is estimated from experiments with animals that chloroform is at least 35 times as toxic to the heart as ether.

Chloroform is much less irritant to the respiratory tract than ether, but collapse of the respiration and heart appears more frequently after its use than after the use of ether. Both chloroform and ether may irritate the kidneys; serious metabolic disturbances—delayed poisoning—may follow the use of chloroform.

Nausea and vomiting are more frequent after the use of ether than after chloroform.

(See “Anæsthetics,” under Surgical Nursing.)

CATHARTICS

Classify cathartics and state action of each group.

Cathartics, according to their origin, may be classified as saline, vegetable, and vegetable-oil cathartics, and mercurials.

Saline cathartics—magnesium sulphate, etc.—act largely through their physical property of salt action, preventing the absorption of water in the large bowel and keeping the fæces fluid, and also, when sufficiently concentrated, as irritants to the intestine, stimulating peristalsis, and depleting the portal circulation.

Vegetable cathartics of which cascara, senna and aloes are examples, act largely through their stimulating and irritating effect on the intestinal mucosa, exciting the glands to increased secretion, and increasing peristalsis through reflexes to the muscular layer through the plexuses of Auerbach and Meissner.

Vegetable oil cathartics, of which castor oil and croton oil are examples, act in a similar way.

The mercurials—calomel, blue-mass, etc.—are purely irritant cathartics, acting in an intensive way, like the vegetable oils.

Name and give dose of a vegetable cathartic; a saline cathartic.

Aloes is a vegetable cathartic and may be given in the dosage of 10 grains.

Tartrate of potassium and sodium (Rochelle salt) is a saline cathartic, and its usual dose is 2 drachms, or two teaspoonfuls.

State an important principle to observe in administering saline cathartics.

Saline cathartics should always be given to the patient when his stomach is empty, preferably in the morning.

Why should a dose of calomel be followed by a saline purgative?

Calomel should be followed by a saline purgative because unless the intestine be emptied of calomel within a reasonable time it may continue to be absorbed and produce symptoms of poisoning, or salivation.

What is the common name for oleum ricini and what is its action?

Oleum ricini is castor oil. It is one of the oily cathartics of the vegetable group, its active principle being ricinoleic acid. It is relatively non-irritating and is frequently used in auto-toxæmias even when irritation of the intestine is marked, as in the diarrhoeal diseases. The average dose is two tablespoonfuls.

Name three cathartics and two laxatives, giving doses.

CATHARTICS:

Magnesium sulphate,	Epsom salt,	a tablespoonful.
Pil. cathartic. comp.,	cathartic pills,	2 pills.
Hydrarg. chlor. mite,	calomel,	2 grains (fractional doses).

LAXATIVES:

Aloin,	$\frac{1}{2}$ of a grain.
Compound licorice powder,	one teaspoonful.

What is magnesium sulphate? How is it used?

Magnesium sulphate is a crystalline powder, known as Epsom salt, and used in medicine as a saline cathartic. It is best given in solution early in the morning before eating.

Give the average dose of castor oil for an adult and for a child of 6 years.

The average dose for an adult is one ounce.

A child of six years may take a tablespoonful.

From what source is mineral oil obtained? What is its action in the body?

Mineral oil is obtained from petroleum of a rather high grade, by distilling away all volatile matter, purifying the residue, and

separating the oil from the more solid petrolatum. It is therefore a liquid petrolatum.

It acts in the body as a softener of fæcal material in the colon, since it is not acted upon by digestive juices, and does not absorb in the large or small intestine.

What is in the white paper and the blue paper of a Seidlitz powder? Tell how to prepare and give.

The white paper contains tartaric acid; the blue paper a mixture of Rochelle salt and bicarbonate of soda. The contents of each paper is dissolved in a fourth of a glass of water, using a separate glass for each powder. Mix the two solutions and drink while effervescing.

DIGITALIS

What is the physiological action of digitalis?

Digitalis slows the heart through its tonic action on the pneumogastric centre and its direct action through the bundle of His, allowing the auricle more time to fill with blood, and draining the veins. Digitalis increases the strength of the ventricular contraction, emptying the ventricle and filling the aorta more completely. This is done through its direct stimulating action on the cardiac muscle fibres. The heart is enabled to do more work after digitalis. On the blood-vessels it stimulates the muscular coats to contract by a central action, as well as through a direct action on these coats, raising the blood-pressure. The pulse is slower and firmer after digitalis.

An increase in the urinary output, especially in the fluid content, is brought about by the increased pressure in the renal artery.

For what purpose is digitalis given in therapeutics? Is it a good emergency heart stimulant?

Digitalis is given in therapeutics to rest the heart and strengthen the heart muscle in valvular heart disease accompanied by cardiac dilatation, in chronic diseases caused by degeneration of the heart muscle, and in certain kidney diseases to increase the output of urine. Digitalis and strophanthus slow beat and strengthen contractions. Digitalis is not a good emergency heart stimulant as it is absorbed very slowly.

Name a drug (a) which will strengthen the contraction of the heart, (b) one which will accelerate the pulse, (c) one which will slow the pulse, and explain the action of each.

(a) Digitalis will strengthen the contraction of the heart by stimulating the pneumogastric nerve as well as the heart muscle directly.

(b) Atropine, will accelerate the pulse by paralyzing the ends of the pneumogastric and releasing the "brake" of the heart.

(c) Digitalis will slow the pulse by stimulating the pneumogastric nerve centre in the medulla and also by rendering less irritable the bundle of His.

Name two heart sedatives and give dose of each.

Veratrum viride, given as the fluidextract, dose m.i, or tincture m.xv is a heart sedative, as is also aconite, given frequently as the tincture, dose m.x.

If you find the pulse of a patient receiving digitalis to be 60, what should you do?

The administration of digitalis should be discontinued.

Give the difference in action of strychnia and digitalis on the heart.

Strychnia acts on the heart through its stimulating effect on the pneumogastric and vaso-constrictor centres in the medulla, slowing the heart and raising the blood-pressure. It has no direct action on the heart muscle and does not increase the muscular tone.

Digitalis acts on the heart muscle by a direct stimulating action, and also slows the heart by an action on the muscle and on the pneumogastric. The diastole or resting period is lengthened and the tonus of the heart muscle is increased. The blood-pressure is also raised by digitalis, both by a central action and probably a direct action on the muscles of the vessels themselves.

Mention one of the special points of difference in the physiological action of nitroglycerin and digitalis.

Nitroglycerin dilates the blood-vessels and makes the pulse more rapid and soft.

Digitalis contracts the blood-vessels, slows the heart beat and makes the pulse firmer and slower. Nitroglycerin acts primarily

on the muscle of the vessel walls; digitalis primarily on the muscle of the heart.

Give the botanical name and two preparations of digitalis.

Digitalis is the leaves of the *Digitalis Purpurea* (Purple Fox-glove).

The tincture and the infusion are commonly used preparations.

What are the indications for discontinuing the use of digitalis?

When a very slow, faint and intermittent pulse appears, or nausea, or vomiting—the symptoms together or singly indicate that digitalis should be discontinued.

What is the dose of tincture of digitalis, infusion of digitalis, and digitalin?

The average dose of tincture of digitalis is 10 minims.

The average dose of infusion of digitalis is 2 teaspoonfuls.

The average dose of digitalin (Merck's amorphous) is gr. 1/5.

NARCOTICS

What is meant by the Harrison Act? Has the nurse any responsibility under its provisions?

The Harrison Act is a federal law which went into effect on March 1, 1915, which regulates the possession, purchase, sale and prescribing of habit-forming drugs, such as opium, morphine, cocaine and the like.

A nurse has no authority to have forbidden drugs in her possession or to sell or give such drugs to patients except on the written order of a licensed physician, whose license number must be recorded on such order. It obliges all persons, especially nurses and physicians, under pain of severe penalties, to enforce and abide by its provisions.

Name six drugs and medicines classified as narcotics under the Harrison Anti-Narcotic act.

Opium, except preparations containing 2 grains to the ounce or less.

Tincture of opium (Laudanum).

Morphine and all its salts, excepting preparations containing 1/4 grain to the ounce or less.

38 STATE BOARD QUESTIONS AND ANSWERS

Codeine and its salts, excepting preparations containing one (1) grain to the ounce or less. Cocaine and its salts. Heroin and its salts.

What is the action of opium and its preparations on:
(a) Secretions? (b) Respiration? (c) Pain? (d) Insomnia?
(e) Temperature?

(a) The secretions, especially of the alimentary tract, are markedly diminished by opium; the sweat glands slightly stimulated. Mucus and salivary secretion are diminished.

(b) Respiration after opium is slower and more shallow, up to the point of cessation, by the remarkable depressant action of this drug on the respiratory centre in the medulla.

(c) Pain is abolished by the depressing action of opium on the cerebral centres governing sensation and thought.

(d) Insomnia, especially when due to pain, is quickly relieved by opium and its derivatives, through its depressing action on the sensory centres of the brain.

(e) Large doses of opium or derivatives may cause a fall of temperature, due to deficient oxidation and disturbance of the heat-regulating mechanism.

From what is opium obtained?

Opium is the inspissated juice of the incised capsule of the poppy (*papaver somniferum*).

Name two alkaloids of opium in common use and give hypodermic dose of each.

Morphine, dose gr. $\frac{1}{6}$.

Codeine, dose gr. $\frac{1}{2}$.

Mention forms of opium and its derivatives in common use, giving doses of each.

Opium is given in doses of gr. iss; powdered opium gr. i; extract of opium gr. ss.; camphorated tincture of opium, $\mathfrak{ss}$. Tincture of opium, deodorized tincture of opium, vinegar of opium, and wine of opium, are given in a dosage of 10 minims. Powder of ipecac and opium is given in a dosage of 10 grains. Morphine and its salts have a dosage of gr. $\frac{1}{4}$; codeine and salts, gr. ss; apomorphine, gr. $\frac{1}{30}$ to $\frac{1}{10}$.

Why is atropine sometimes used in connection with morphine when given hypodermically? What is the usual dose when given in this way?

Atropine tends to counteract the depressing effect of morphine on the respiratory centre and is a psychological antagonist of morphine in other ways also. The usual dose given in this way is $1/150$ to $1/100$ grain.

Give symptoms of an overdose of opium. What treatment should be given in opium poisoning?

A deep torpid sleep from which the patient cannot easily be awakened is characteristic of poisoning with large doses of opium or morphine; a drowsy condition is produced by lesser doses. The respiration is slow and may be reduced to three or four a minute; the pulse is full and somewhat slow; the pupils are much contracted. The face is purplish and congested.

In opium poisoning the stomach should be emptied by emetics; mustard water is suitable, if the poison has been recently taken. Otherwise stomach washing with strong tea, or 1 to 5000 potassium permanganate solution should be employed at intervals of half an hour. The bladder should be emptied by catheter. Strong coffee should be given by rectum, or caffeine sodium benzoate (gr. ii) or atropine sulphate gr. $1/100$ by hypo. If the respiration is much slowed and the patient is semi-comatose, artificial respiration should be used, keeping it up with relays for an hour or so.

If the patient is not comatose, he should be kept awake by every available means—walking, hitting the bare skin with iced towels, etc., to avoid respiratory paralysis.

If an overdose of morphine had been given, what should the nurse do pending the arrival of the physician?

(See above "treatment of opium poisoning.")

What is Adrenalin? Insulin?

Adrenalin is the active principle of the suprarenal gland, usually made from the glands of cows, sheep or hogs. It is used in a 1 to 1000 solution as a heart stimulant injected by hypodermic, and to contract blood-vessels.

Insulin is the principle isolated from the pancreas of animals,

which enables the body to store up modified sugar in the tissues. It is used to relieve diabetes.

MISCELLANEOUS

What drug is commonly used in the treatment of infected eyes?

Argyrol is commonly used in the treatment of infected eyes in 10 to 20 per cent. watery solution.

What is apomorphine and for what is it used?

Apomorphine is an artificial alkaloid derived from morphine. It is used in therapeutics as an expectorant (gr. 1/40), or as an emetic (gr. 1/10). It may be given hypodermically.

What is belladonna? Name its active principle.

Belladonna is the leaves of the *Atropa Belladonna*. Its active principle is an alkaloid, atropine.

Name the principal drug in the following preparations: Fowler's solution, blue ointment, Blaud's pills, paregoric.

The most active ingredient in Fowler's solution is arsenic trioxide.

The most active ingredient in blue ointment is metallic mercury.

The most active ingredient in Blaud's pills is carbonate of iron.

The most active ingredient in paregoric is opium.

Mention three purposes for which arsenic is given and pretoxic and acute poisonous symptoms.

Arsenic is given as a hæmatinic with iron in anæmias, as an alterative in certain skin diseases such as psoriasis and as an antisymphilitic in the form of arsphenamine in syphilis.

Pretoxic symptoms of arsenic poisoning are puffiness of the eyelids and nausea or anorexia.

Acute poisoning is accompanied by tightness in the throat, gastric and abdominal pain, diarrhoea with rice-water stools, prostration, vomiting, and urinary suppression. Virulent headache, muscle pains followed by collapse and coma occur in fatal cases.

Define and tell briefly what you know about carbolic acid.

Carbolic acid, or phenol, C_6H_5OH , occurs in colorless needles, becoming a liquid when slightly warmed, and is soluble in twenty

parts of water. These needles also remain liquid on the addition of alcohol, water, or glycerin, and most of the acid in use is this liquid form. It is caustic to the skin, leaving a white mark, and lessens sensation locally. Taken internally it paralyzes the brain and acts as a poison to all of the tissues and organs of the body. By its direct poisonous action on the heart-muscles it slows that organ.

It irritates the kidney, even in non-poisonous doses, and renders the urine smoky in color. It destroys bacteria with great rapidity.

It is used as a gastric sedative, in vomiting, for its local anæsthetic action on the stomach, one minim being given in pill or solution. As a caustic, in surgery, phenol is used in infected wounds. Its antiseptic action is utilized in surgery in 2 to 5 per cent. solution. Wet dressings to the extremities may cause gangrene. Its antipruritic action is utilized to prevent itching. As a disinfectant for stools in typhoid fever and other diseases, phenol is much used in solution of 5 per cent.

What is Fowler's solution? Dover's powder?

Fowler's solution is solution of arsenite of potassium. It contains 1/100 grain of arsenous acid in one minim.

Dover's powder is powder of ipecac and opium. It contains 10 per cent. of ipecac and 10 per cent. of powdered opium in sugar of milk.

What is the general effect of chloral? How does it affect the circulation? What is its average dose?

In moderate doses chloral produces a quiet, dreamless sleep, through its depressive action on the centres. Nausea and general depression may follow its use. In large doses it causes a rapid fall of blood-pressure, making the pulse soft and rapid. It is depressing to the heart and respiratory centre, and may cause cardiac and respiratory paralysis.

The average dose of chloral-hydrate is 10 grains.

Name two forms or preparations of camphor in common use and state in what conditions they are used and in what dosage.

Spirit of camphor is used as a stimulating external application in local pain, and internally as a vaso-dilator. Its dose internally is mx to mxx.

Camphor or gum camphor is used as an intramuscular injection as an emergency stimulant in shock or cardiac weakness. It is best given dissolved in oil in a dose of gr. i to gr. iii.

Name four coal-tar derivatives.' Name two narcotics.

Four coal-tar derivatives are: acetanilid, phenacetin, carbolic acid, salicylic acid.

What is acetanilid? Is it more toxic than phenacetin? In what class of proprietary remedies is it often found?

Acetanilid is white, insoluble powder, derived from coal-tar, and used in medicine as an antipyretic and analgesic. It is more toxic than phenacetin. It is often the chief ingredient of headache powders and tablets.

Name six poisonous or potent tinctures. What is the dose of the potent tinctures?

Six potent tinctures are aconite, belladonna, cannabis indica, digitalis, nux vomica, opium. The doses range from m.viii to m.xv.

(a) What is Lugol's solution? (b) Name one disease in which it is usually used.

(a) Lugol's solution is a compound solution of iodine, a preparation similar to tincture of iodine, which contains iodine and potassium iodide, and is given internally in a dosage, usually of 3 minims, well diluted.

(b) It is used in the treatment of simple goitre and as a prophylactic against goitre.

Into how many groups may drugs be divided that are used primarily for their effects on the uterus? Illustrate each group.

The drugs which act upon the uterus are divided into the uterine stimulants or ecbolics or oxytocics, such as ergot; the emmenagogues which increase menstrual flow, such as oil of pennyroyal; and the uterine muscle depressants, such as viburnum.

Mention a disease or condition in which the following drugs might be used: Sodium bicarbonate, Fowler's solution, Lugol's solution, chloral hydrate and digitalis.

Sodium bicarbonate is used to lessen vomiting; Fowler's solution is used to stimulate appetite and improve nutrition; Lugol's

solution is used in goitre; chloral hydrate is used to produce rest and sleep, and digitalis is used in treatment of decompensated heart disease.

- (a) What is cinchona? (b) What is its chief alkaloid?
(c) What is the use and action of this alkaloid?

(a) Cinchona is the dried bark of several varieties of the cinchona tree, which grows in South America.

(b) Its chief alkaloid is quinine.

(c) This alkaloid is used as a specific in malaria, as a bitter tonic and stomachic in loss of appetite. One of its salts is also employed as a local anæsthetic. It is a protoplasmic poison, and as such kills the malarial parasite in human blood. Its intensely bitter taste makes it valuable as a bitter tonic.

What is the average dose of quinine?

Five grains.

What unusual and non-beneficial symptoms may follow a large dose and what is the condition called?

Ringing in the ears, deafness and headache may follow the use of quinine. This complex of symptoms is called cinchonism.

Tell what you can of pituitrin, scopolamine and salvarsan.

Pituitrin is the active principle of the posterior portion of the pituitary gland of certain animals, in a permanent watery solution. It is reputed to cause a rise in blood-pressure lasting for an hour or more, has a marked diuretic action and increases the contractility of the uterine muscle. It is used in circulatory collapse, in prolonged labor and in post-partum hæmorrhage in dose of $\frac{1}{2}$ to 1 c.c. by hypodermic.

Scopolamine is an alkaloid similar in chemical and physical properties to hyoscine. One of its salts is used as a hypnotic and sedative, more recently in connection with morphine or "narcophan" as analgesic in labor—the so-called "twilight sleep" technic. A small dose of morphine—gr. $\frac{1}{8}$ —combined with 1/100 scopolamine is used at first. The scopolamine is repeated at suitable intervals until memory is abolished and analgesia is obtained.

Salvarsan, or 606, is an organic substitution compound of arsenic. It is marketed as a sulphur yellow powder, in small sealed glass tubes, which is soluble in water, but is rendered more soluble by the addition of alkali. It has a specific lethal

action on the parasite of syphilis and causes a rapid disappearance of the symptoms of the disease, especially the early symptoms. An apparent cure results, which may be followed by a relapse unless further treatments and mercurial medication be given. The dose is 0.6 gm. given in alkalinized solution intravenously; less frequently intramuscularly in oil or solution.

What is strychnia? What is it used for?

Strychnia is an alkaloid derived from *nux vomica* and kindred plants. It is a very bitter substance, and its salts are soluble in water. It increases the intensity of all the spinal reflexes, acting on the spinal centres, and also stimulates the pneumogastric, respiratory and vaso-constrictor centres in the medulla, making the respiration deeper, the pulse slower and fuller and the special senses more keen after moderate doses. Poisonous doses cause tetanic convulsions and respiratory paralysis.

It is used as a general stimulant to the nervous system, in debility, loss of tone, etc., as a heart stimulant, and respiratory stimulant in collapse and shock (when it is usually given by hypodermic injection), and as a general tonic and stomachic in gastric and intestinal atony.

What is the alkaloid of coca leaves?

Cocaine is the alkaloid of coca leaves.

POISONS AND ANTIDOTES

What is a poison?

A poison is a substance either introduced into the body or originating there which, through its chemical nature, so reacts on the organs as to produce injury or diminished function, temporary or permanent.

Name five drugs that if given in large doses are very poisonous.

Aconite, carbolic acid, opium, bichloride of mercury, cyanide of potassium.

What are the symptoms and treatment of acute arsenical poisoning?

The symptoms of acute arsenical poisoning are tightness in the throat and great pain in the stomach region. Diarrhoea occurs,

culminating in rice-water stools. There is prostration, retching and vomiting, and often complete suppression of urine. Violent headache and pain in the muscles followed by collapse and coma occur in fatal cases. Death may ensue in twenty-four hours or may be delayed some days.

The treatment is to evacuate the stomach immediately, either by administering mustard water, or apomorphine gr. 1/10 by hypodermic, or by the stomach tube. The hydrated oxide of iron and magnesia is the chemical antidote and should be given in gobletful doses. Keep the patient quiet, and, if the diarrhoea has not commenced, give half a pint of very strong coffee by rectum.

What are the symptoms and treatment of carbolic acid poisoning?

Carbolic acid poisoning is shown by white stains on the lips, the carbolic odor on the breath, and in the excretions; white and excoriated patches on the mouth and pharynx, circulatory depression, and coma with contracted pupils as in opium poisoning, urinary retention and smoky urine. Treatment: wash the stomach with dilute alcohol, or lime water, or solution of magnesium sulphate. Give milk or egg-white, and stimulate with coffee by rectum and external warmth. Catheterize the bladder.

What are the symptoms of cocaine poisoning? What is the treatment for acute cocaine poisoning?

The symptoms are pallor, dry skin, giddiness, fainting, rapid pulse and respiration, tremors, delusions, convulsions, local anomalies of sensation.

The treatment is, use stomach tube, with 1-4000 potassium permanganate solution, use stimulants, as brandy and inhalation of ammonia, strychnine sulphate by hypo. gr. 1/30 with digitalin, gr. 1/50 by hypo., artificial respiration if respiratory paralysis occurs.

Give antidotes for the following: Alum, hydrochloric acid.

An antidote for alum is ammonium carbonate.

An antidote for hydrochloric acid is alkalis.

What is the general treatment of poisoning?

(1) Empty the stomach. (2) Administer an antidote. (3) Treat the symptoms of poisoning.

(a) How would you recognize approaching insulin shock?
(b) What would be your emergency treatment?

(a) Hunger, weakness, abdominal pain, pallor, irregular or rapid pulse, dilated pupils and sometimes unconsciousness are signs of approaching insulin shock.

(b) The treatment is to supply glucose in any form. Orange juice or dextrose may be given by mouth if patient is able to swallow. If patient is unconscious, dextrose solutions may be given intravenously or subcutaneously.

(a) What is a chemical antidote; (b) a physiological antidote?

(a) A chemical antidote is intended to render the poison in the stomach insoluble or inert. (b) a physiological antidote is intended to oppose the constitutional symptoms of the poison.

Give symptoms of strychnine poisoning. (See "Toxic Symptoms of Strychnine" under "Excessive Dosage.")

What are the symptoms of belladonna poisoning? What is the treatment?

The symptoms are dry throat and skin, urine suppressed, skin flushed, pulse rapid, and a rise of temperature, respiration slow and deep, pupils widely dilated, delirium.

The treatment is, use stomach tube or give emetic, give morphine sulphate by hypo. gr. $\frac{1}{3}$, give hot strong coffee by rectum or mouth—8 ounces, use artificial respiration and external heat if necessary.

What are the symptoms of zinc poisoning and what are the antidotes?

Zinc salts, the sulphate and chloride, act as irritant poisons, causing nausea, vomiting, epigastric pain and diarrhoea, ending in shock and collapse. The urine is scanty, containing albumin and casts—sometimes blood, and suppression may occur. The antidotes are carbonate or bicarbonate of soda, a tablespoonful to a quart of water, and milk.

Give briefly treatment for poisoning with (a) iodine, (b) lye, (c) cocaine, (d) chloroform, (e) strychnine.

<i>Name of Poison</i>	<i>Treatment</i>
Iodine	Use a stomach tube or emetic. Give large quantities of starch with cold water. Relieve pain with morphine.
Lye	Do not use stomach tube. Give vinegar diluted followed by milk and white of egg and olive oil.
Cocaine	Use stomach tube. Give strong coffee. Also strychnine and whiskey. Artificial respiration is needed.
Chloroform (anæsthesia)	Artificial respiration. Caffeine by hypo, coffee enema. Strychnine, adrenalin.
Strychnine	Wash stomach with water or strong tea, or give apomorphine hydrochloride gr. $\frac{1}{10}$, potassium bromide 2 drachms, or chloral gr. xxx in water to control convulsions. Keep patient quiet in dark room.

State the antidotes for the following poisons: (a) sulphuric acid, (b) silver nitrate, (c) tr. of iodine, (d) bichloride of mercury.

(a) Sulphuric acid—chalk, soda.

(b) Silver nitrate—common salt as emetic or lavage.

(c) Tr. of iodine—starch water.

(d) Bichloride of mercury—egg albumin.

What danger does a nurse run in preparing to administer barium sulphate prior to an X-ray picture?

The danger of giving the very poisonous barium sulphide instead of the inert barium sulphate. She should always scrutinize the order, and the product received, before administering the powder to the patient, since if abbreviations are used in ordering the dose, as barium sulph., instead of barium sulphate, the poisonous sulphide may be dispensed.

What are the toxic symptoms of atropine, lead?

The toxic symptoms of atropine are the same as those of belladonna. (See above.)

The toxic symptoms of lead are of two types.

(a) Acute lead poisoning is manifest by burning pain in mouth, nausea and vomiting, severe diarrhoea with bloody stools, collapse, coma and death.

(b) Chronic lead poisoning is manifest by insidious onset of gastrointestinal symptoms, such as loss of appetite, nausea, constipation, appearance of the "lead line" along the margin of the teeth and gums, also severe anemia and a paralysis of certain groups of muscles.

What would you do for a person who had swallowed:
Paris green?

Paris green, or arsenite of copper poisoning should be treated by the administration of freshly prepared sesquioxide of iron in tablespoon doses, given in water every 20 minutes. (To prepare this, drop tincture of chloride of iron into a half-pint of ammonia water until no more precipitate forms, strain through cheese cloth, and wash the precipitate in cold water for a few minutes.) While this is being prepared the stomach should be washed, or vomiting produced by mustard water (3i to Oi). The recumbent position should be maintained, coffee given by rectum, and opiates to relieve pain.

Following lavage or emesis, bland drinks and castor oil are indicated, with dry heat to the abdomen and extremities.

SOLUTIONS

How many grains of any drug will be required to make one ounce of one per cent. solution?

There are 480 minims in an apothecary's fluidounce, but for practical purposes it has been customary to consider the ounce as containing 500 minims. One grain to one hundred minims would be one per cent. solution, hence, 5 grains will be used to 500 minims, or one ounce.

How much of a drug must be used to make ounces 3 of a 1 per cent. solution?

15 grains should be used to 3 ounces of solution.

How would you make the following solutions: Bichloride of mercury 1/3000? Carbolic acid 2½ per cent.?

To make a litre of solution of bichloride of mercury 1 to 3000, take of stock solution of mercury bichloride 1 to 10—

3.33 c.c. and water a sufficient quantity to make one litre. For since 10 c.c. to a litre will make 1 to 1000 solution, to make $\frac{1}{3}$ of that strength, or 1 to 3000, you should take $\frac{1}{3}$ of 10 c.c. or 3.33 c.c.

To make a litre of carbolic acid solution $2\frac{1}{2}$ per cent., add 25 c.c. of carbolic acid to enough water to make a litre. $2\frac{1}{2}$ to 100 is in the ratio $10 \times 2\frac{1}{2}$, or 25, to 1000.

How would you prepare one pint of 5 per cent. carbolic acid solution?

A pint contains 128 drachms.

$128 \times .05 = 6.40$ drachms, or ʒvi m.xxiv .

This added to enough water to make a pint will make a 5 per cent. solution.

How would you make a sterile saturated solution of boric acid if you had an ounce package of crystals of boric acid and a two quart fruit jar?

Boil the jar for 5 minutes and boil 2 quarts of water for the same length of time. Remove the jar and the water to cool somewhat, and pour the water in the jar until it is $\frac{3}{4}$ filled. Then put in the crystals of boric acid and shake or stir with a sterile large stirring spoon. Cool, and add more water if some of the crystals fall out of solution on cooling.

Give 15 grains of sodium bromide from a 25 per cent. solution.

In a 25 per cent. solution 1 grain of the salt would be found in every 4 minims of the solution. To give 15 grains of sodium bromide it would be necessary to give therefore 15×4 minims or 60 minims, or 1 fluid drachm of the 25 per cent. solution.

How would you prepare 1/2000 bichloride solution?

To prepare a litre of 1-2000 solution from stock solution 1-10:

The common denominator of 10 and 2000 is 2000.

$2000 \div 10 = 200$. 1-2000 is therefore $1/200$ of the strength 1-10. To make a litre, or 1000 c.c. of 1-2000 solution take $1/200$ of 1000 c.c., or 5 c.c. of 1 to 10 solution.

How would you prepare a solution of potassium permanganate 1-2000?

Proceed as in the directions for making 1-2000 bichloride of mercury solution, page 49.

How would you prepare normal salt solution? What per cent. is normal salt solution? What is the chemical formula of salt?

Normal salt solution is prepared by adding 6 to 9 grams of sodium chloride to a litre of water. Normal salt solution is 6/10 to 9/10 of 1 per cent. The chemical formula of sodium chloride is NaCl.

How many grains of salt will be required to make one quart of normal salt solution?

Normal, or physiological, salt solution contains from 0.6 to 0.9 per cent. sodium chloride. As a pint may be conveniently supposed to contain 8000 minims or grains, and as 0.8 per cent. means 8 grains in 1000 minims, we will have the ratio: 8:1000 :: x :8000.

$$1000x = 64,000. \quad x = 64 \text{ grains to a pint.}$$

$$2 \times 64 \text{ or } 128 \text{ grains to a quart.}$$

1 in 20 = ? per cent?

As per cent. means "in 100," one is to twenty as the unknown percentage is to 100.

$$1:20::x:100. \quad 20x = 100. \quad x = 5 \text{ per cent.}$$

1 in 1 = ? per cent?

$$1:1::x:100. \quad 1x = 100. \quad x = 100 \text{ per cent.}$$

1 in 100 = ? per cent?

$$1:100::x:100. \quad 100x = 100. \quad x = 1 \text{ per cent.}$$

1 in 8000 = ? per cent?

$$1:8000::x:100. \quad 8000x = 100. \quad x = \frac{100}{8000} \text{ or } 1/80 \text{ per cent.}$$

1 in 10,000 = ? per cent?

$$1:10,000::x:100. \quad 10,000x = 100. \quad x = \frac{100}{10,000} \text{ or } 1/100 \text{ per cent.}$$

The pure drug in bulk is what per cent?

The undissolved drug is 100 per cent. strength.

The pure drug in bulk is one part in how many parts?

The pure drug in bulk is 1 part in 1 part.

What strength solution would 7.3 gr. bichloride of mercury tablets make in 4 quarts of water?

One tablet of 7.3 gr. dissolved in a pint of water, which contains something less than 8000 grains (the weight of a given volume being dependent on the temperature of the water), would give a solution of about 1 to 1000; dissolved in 4 quarts, or 8 pints of water, the dilution would be about 8×1000 or 8000.

How much of a solution of strychnine sulphate containing gr. 1/100 to 3ss will contain gr. 1/120?

To find the least common denominator of 100 and 120.

$$\frac{20/100}{5} \quad \frac{120}{6}$$

$$20 \times 5 \times 6 = 600. \quad 1/120 = 5/600.$$

$1/100 = 6/600$. $1/120$ is therefore $5/6$ of $1/100$. If 3ss, or 30 minims, contains $1/100$ of a grain, and $1/120$ of a grain is $5/6$ of $1/100$ grain, then $5/6$ of 30 minims, or 25 minims, will contain the required quantity.

Make one gallon of solution of bichloride of mercury 1-5000 in the apothecary's measure and also in the metric system.

Apothecary's measure:

As 5 grains to the ounce is approximately a 1 per cent. solution in the apothecary's measure, and one gallon contains 8 pints or 128 ounces, a gallon of 1 per cent., or 1 to 100 solution, would contain 128×5 or 640 grains. 1 to 1000 would contain $1/10$ of the 1 to 100 quantity; 1 to 5000 would contain $1/50$ of the 1 to 100 quantity. $1/50$, therefore, of 640 grains is $12\frac{4}{5}$ grains, the desired quantity of bichloride of mercury.

Metric system:

Four litres is something over 4 quarts, as a litre is the equivalent of 2.1 pints.

To make 4 litres of solution or 4000 c.c., or G. take 1/5000 of 4000 or $\frac{4000}{5000}$ or $4/5$ or 0.8 G. bichloride of mercury.

As 4 litres is equal to (4×2.1) 8.4 pints, the quantity in excess of 8 pints, or 0.4 pint, should be poured off and discarded to get exactly a gallon.

$(0.4 \times 16 = 6.4$ ounces, or 6 ounces, 3 drachms, 12 minims.)

Make 30 c.c. of a 1 per cent. solution of silver nitrate from 10 per cent. stock solution.

Let x equal the quantity to be used. Then we have the equation, $1 : 10 :: x : 30$. $10 \ x = 30$. $x = 3$ c.c., the desired quantity.

Demonstrate the problem of making a 4 per cent. solution of boric acid (a) accurately, (b) approximately.

To make 4 per cent. solution of boric acid accurately, the quantity required being 1 litre:

4 per cent. means 4 parts in 100 parts by weight. Taking 4 grams of boric acid in every 100 cubic centimeters of water, 10×4 , or 40 grams will be required if we make 10×100 , or 1000 c.c. of solution. 40 G. should be dissolved in 500 c.c. of water at 15° C. Enough water at the same temperature should then be added to make 1000 c.c. or a litre.

To make this solution approximately, 20 grains to the ounce of water will give a 4 per cent. solution, or to a quart, which is something less than a litre, the quantity will be 640 grains, or 10 drachms, and 40 grains, or 1 ounce, 2 drachms, 40 grains—roughly, one ounce to the quart.

How many grains to the ounce in a 1 per cent. solution?

There are actually 4.8 grains to the ounce in a 1 per cent. solution. For practical purposes it is convenient to consider 5 grains to the ounce as constituting a 1 per cent. solution.

How would you prepare a 2 per cent. carbolic solution from pure carbolic acid, using one-half a gallon of water?

One-half a gallon is 4 pints, or 64 ounces.

As 5 grains to the ounce approximates a 1 per cent. solution, 10 grains to the ounce will approximate a 2 per cent. solution.

$10 \times 64 = 640$ grains,

640 grains = one ounce and 160 grains, or one ounce, 2 drachms and 40 grains of carbolic acid, liquefied by heat; if not convenient to weigh, liquid measure may be substituted.

If you have cocaine solution in water 4 per cent. and the physician wishes 1 per cent., how do you prepare the solution?

The common denominator of 1 and 4 is 4.

4 per cent. is four times the strength of 1 per cent.

To make a given quantity of a solution of 1 per cent. from 4 per cent., take $\frac{1}{4}$ of the total quantity desired, which will give the amount of 4 per cent. solution to be used. Add to this sufficient water to make the required total.

What is meant by a 25 per cent. solution?

A 25 per cent. solution means 25 parts, by weight or volume, of a given substance, dissolved in enough solvent to make the total 100 parts.

What amount of stock solution 1-20 will be required for 1 litre of solution 1-5000?

The common denominator of 20 and 5000 is 5000.

$5000 \div 20 = 250$. 1 to 20 solution is therefore 250 times the strength of 1 to 5000.

A litre contains 1000 c.c. To make 1-5000 solution from 1-20, we must take $1/250$ of 1000 c.c., or 4 c.c. of 1-20 solution.

How much bichloride of mercury would you use to make 32 ounces 1-1000 solution?

1 to 1000 is 0.1 of 100, or $1/10$ per cent. Since 5 grains to the ounce makes approximately 1 per cent. solution, to 32 ounces it will require 32×5 , or 160 grains, to make a 1 per cent. solution. To make $1/10$ per cent. solution, it will require $1/10 \times 160$ grains or 16 grains to 32 ounces to make 1 to 1000 solution.

How much of a 4 per cent. solution of lysol will it take to make 2 quarts of a $\frac{1}{2}$ per cent. solution?

Two quarts equals 2000 c.c. 2000 divided by 4 (the original strength) is 500. 500 multiplied by $\frac{1}{2}$ (the desired strength) is 250. Therefore 250 c.c. of a 4 per cent. solution of lysol is required to make 2 quarts of a $\frac{1}{2}$ per cent. solution.

54 STATE BOARD QUESTIONS AND ANSWERS

From a 10 per cent. solution of silver nitrate make 100 c.c. strength 1-1000. Give answer in minims.

The original solution is 10 per cent. or 1:10, or 1/10 and inverted is 10/1, then $1/1000 \times 10/1 \times 100$ equals the amount of stock solution to use, or 1 c.c. or 15 minims.

From a 40 per cent. solution of sodium bicarbonate, give 15 grains.

40 per cent. solution means 40 grains to 100 minims. 100 divided by 40 and multiplied by 15 is 25. Therefore 25 minims is equivalent to 15 grains.

How much water is necessary to prepare a 1-1000 solution from a $7\frac{1}{2}$ grain tablet of bichloride of mercury.

Let X stand for the unknown quantity of water required; then the $7\frac{1}{2}$ grain tablet has the same ratio to the unknown as 1:1000. $7\frac{1}{2} : X :: 1 : 1000$. Solving: X equals 7500. 7500 c.c. of water are necessary.

Make 2 litres 1-1000 from stock solution 1-50.

$\frac{1000}{50} = 20$. 1-100 is therefore 1/20 the strength of 1-50.

2 litres = 2000 c.c. 1/20 of 2000 = 100 c.c., the quantity of 1 to 50 solution required.

To make 2 litres 1-1000 from 1-50, take of 1-50 solution 100 cc.; water 1900 c.c.

Make 1 litre of 1-20 solution of carbolic acid from the crystals.

1/20 of a litre, or 1000 c.c., is 50.

50 grams of the crystals of carbolic acid should be added to 800 c.c. of boiling water, and mixed well. When it has cooled, a sufficient quantity of water should be added to make the total measure 1000 c.c. If it is desirable to use the liquefied acid, add 5 per cent. of hot water to the crystals, and add 1/20 more of the solution ($1/20 \times 50 \text{ c.c.} = 2.5 \text{ c.c.}$), making the total 52.5 c.c.

Prepare 1 litre carbolic acid solution 1-40 from stock solution 1-20.

As 20 is $\frac{1}{2}$ of 40, the solution 1-20 is twice the strength of 1-40.

To make a litre of 1-40 solution from 1-20, take $\frac{1}{2}$ of 1000 c.c., or 500 c.c. solution 1-20, and water, a sufficient quantity to make a litre.

What are solutions?

A solution is the condition brought about when a substance, solid, liquid, or gaseous, is equally diffused through a liquid in a state of molecular subdivision. In the restricted sense, the term applies to a liquid in which a solid has been dissolved.

Name two saturated solutions frequently used.

Saturated solution of boric acid and of magnesium sulphate.

What is the difference between solutions and tinctures?

Solutions are powerful solutions of non-volatile substances in water.

Tinctures are preparations of vegetable drugs, not weaker than 10 per cent., made by extracting the properties of the drug with an alcoholic liquid.

Which is the stronger, a tincture or a fluidextract?

A fluidextract is stronger than a tincture, the tincture usually being not more than 10 per cent. in strength, while a fluidextract is 100 per cent. strength.

What is Labarraque's solution?

Labarraque's solution is the name given to the solution of hypochlorite of sodium official in the U. S. Pharmacopœia. It is manufactured from chlorinated lime and carbonate of soda, and is required to contain 2 per cent. available chlorine. It takes its name from its discoverer, Antoine Labarraque, a French chemist of the eighteenth century. It is almost exclusively used as a disinfectant and deodorant.

What is meant by the strength of a solution? Give example.

The strength of a solution means the number of parts of the active ingredient contained in a specified amount of the solvent. This proportion may be expressed in three ways:

- (1) By percentage, as "1 per cent. carbolic acid solution."
- (2) By proportion, as "1 to 100 solution of carbolic acid."

(3) By weights and measures, as "5 grains of carbolic acid to the ounce," or "10 mills of carbolic acid to the litre."

What is a saturated solution?

A saturated solution is the stage reached in making a solution of a substance when, at ordinary temperature (usually 60° F.) no more of the substance will be dissolved by the solvent.

Tell how to prepare the following: saturated solution of boric acid; alcohol 25 per cent.; diluted tincture of iodine suitable for wound disinfection.

To make a saturated solution of boric acid add one ounce of boric acid crystals to a pint of warm water and set aside, shaking occasionally. Strain, or filter out the excess of crystals after a few hours and they may be used over again. As one part of boric acid is soluble in eighteen parts of water, the crystals will in this formula be in the slight excess necessary to produce a pint.

25 per cent. = 0.25. 0.25×16 ounces = 4 ounces of alcohol.

Tincture of iodine of not more than 50 per cent. strength is used for skin preparation and wound disinfection.

50 per cent. = 0.50. To find the quantity of tincture of iodine to be added to a pint of alcohol, multiply the number of ounces in the total amount by 0.50.

$16 \times 0.50 = 8.0$. 8 ounces of tincture of iodine should be added to 8 ounces of alcohol to secure 50 per cent. strength of the tincture.

What is a supersaturated solution?

A supersaturated solution is a solution made to dissolve the greatest possible amount of substance by heating.

Explain isotonic, hypotonic and hypertonic as applied to saline solutions.

An isotonic saline solution has the same osmotic pressure as blood serum.

A hypotonic saline solution has a less osmotic pressure than the blood serum.

A hypertonic saline solution has a greater osmotic pressure than the blood serum.

WEIGHTS AND MEASURES

How many grains in : (a) one ounce; (b) one cubic centimetre?

There are 480 grains in the apothecary's ounce.

One cubic centimetre of water at 15° C. weighs 15.43 grains.

What is the equivalent in fluidrachms of the following: teaspoonful, dessertspoonful, tablespoonful?

A teaspoonful is one fluidrachm.

A dessertspoonful is two fluidrachms.

A tablespoonful is four fluidrachms.

What is the equivalent in fluidounces of the following: wineglassful, teacupful and tumblerful?

A wineglassful is one fluidounce.

A teacupful is four fluidounces.

A tumblerful is eight fluidounces.

Complete the following tables:

1 pint = ? c.c.	1 ounce = ? grains.
1 c.c. = ? grains.	1 c.c. = ? grams.
1 c.c. = ? minims.	

1 pint = 500 c.c.	1 ounce = 480 grains.
1 c.c. = 15.43 grains.	1 c.c. = 1 gram.
1 c.c. = 16.23 minims.	

Give the table for wine measure.

m.lx or 60 minims	= 1 fluidrachm.
ʒ viii or 8 fldr.	= 1 fluidounce.
ʒ xvi or 16 ounces	= 1 pint.
ʒ xxxii or 32 fl.oz.	= 1 quart.

Complete the following:

? c.c. = ʒi.	? c.c. = O.i.	? minims = c.c.
? gr. = gm.	? oz. (troy) = lb.	
4 cc. = ʒi.	500 c.c. = O.i.	
16.2 m. = c.c.	15.41 gr. = 1 gm.	ʒ xii = lb.

Give apothecary's table for solids with symbols.

gr.xx	=	℥i
℥iii	=	℥i
℥viii	=	℥i
℥xii	=	—lb.i

What is the equivalent of one quart in the metric system?
 One ounce in the metric system? One gram in apothecary's measure? 250 c.c. in apothecary's measure?

One quart in the metric system is (32×30) 960 c.c.

One ounce in the metric system is 30 c.c. or 30 Gm.

One gram in apothecary's measure is 15+ grains.

250 c.c. in apothecary's measure is Oss.

Write the symbols for the following: three fluidrachms;
 six fluidounces; five grains; ten minims; one-half an ounce.

Three fluidrachms,	fl.℥iii	Ten minims,	m.x
Six fluidounces,	℥fl.vi	One-half an ounce,	℥ ss
Five grains,	gr.v		

Change the following to grains: Drams iv; Ounces xii;
 Pounds iv.

Drams iv equals 240 grains.

Ounces xii equals 5,760 grains.

Pounds iv equals 23,040 grains.

Atropine of Be Madonna.

Poisonous Symptoms.

1. Dryness of mouth & throat
2. Excessive thirst
3. Difficulty in swallowing
4. Hoarseness
5. Flushed dry skin
6. Rapid pulse & breathing
7. Pupils dilated

Large doses are given pt becomes excited

Light headed & bursts into tears & laugh

Occasionally illusions & hallucinations

May become quarrelsome. Frequently
excitement is followed by stupor, coma.
Pallor...

Treatment.

1. Wash out stomach frequently
2. Tannic acid and old tannic acid
3. Catheterize to prevent absorption
4. Keep warm mustard baths
5. Stimulents caffeine & strychnine
- Do not give morphine

Atropine sulph. - grs. $\frac{1}{100}$ - $\frac{1}{60}$

$\frac{1}{50}$ - $\frac{1}{50}$.

Morphine.

Small amounts sometimes cause poisonous effects in some people. Others a large dose will cause no effect at all.

Poisonous effects:—

1. Weakness, Depression
2. Continuous nausea & vomiting
3. Delirium, excitement
4. Redness of skin, itching when effects are passing off.

5.

Carbolic Acid Poisoning

Symptoms are:—

1. Pain around mouth & lips in stomach lips & mouth
blanched

2. Nausea & vomiting

3. Headache, dizziness, drowsiness

4. Collapse, rapid thready pulse - cold moist skin
pulse - 40-50. Breathing irregular, difficult
& shallow, patient cyanotic.5. Pt goes in to stupor & coma
Fatal dose - $\frac{3}{4}$ - $\frac{10}{10}$ Treatment:— washout stomach $\frac{1}{2}$ 20% alcohol2. Antidote - mag Sulph. sod Sulph. fine w
milk3. Protect mucous membrane $\frac{1}{2}$ albumin w
or milk.

4. Heart stimulants. Caffeine. Strychnine, etc.

5. Do not give oil or glycerine.

Iodine:Symptoms

1. - Nausea & Vomiting. 2. Diarrhea

Synopsis (4) collapse & rapid thready pulse - cold moist skin
slow shallow breathing dilated pupilsTreatment1. Dilute starch - washout stomach
2. Protect mucous membrane $\frac{1}{2}$ albumin w
or milk.

Head

Loss of appetite - nausea - metallic
taste in mouth

Head lene on June 3 Head cold

Constipation - 5. Vomiting also anemia

Treatment

Mono bowels regularly 1. Trag sulph.

2. K. I. Given 3. Lithopine for
"bad colic"

Anemia - from given.

Course

1. 12 June -

1. Burning pain in esophagus.
stomach 2. Profuse nausea & vomiting

severe abdomen of cramps. ^{very warm} stool

Profuse diarrhoea. 5. Excessive

rest 6. Scanty bloody urine

Colloidal already pulse slow

shallow breathing, 7. Coma

convulsions 6. Heat & discomfort

Treatment

1. 4 June 11

Weak but stomach

not lost mucous mem-

brane in tube or olive oil

Very plenty of water

Analgesics: are drugs that relieve pain when given by mouth.

Antispasmodics are drugs which lessen the contractions of muscle and also lessen convulsions.

Astringents are drugs which harden or contract skin tissues.

Active principles of ergat
in the alkaloids
ergotamine, ergotinine & tyramine

ANATOMY

BONE AND CARTILAGE

(a) What is bone? (b) Cartilage?

(a) Bone is the substance of which the body skeleton is composed. It is made up of collagen infiltrated with carbonate and phosphate of calcium.

(b) Cartilage is a tough elastic tissue made up of a matrix of chondrous material, and cells, which forms the primitive skeleton and persists afterward in various portions of the body.

State points of difference in character of bones of an old person and bones of a child.

A greater amount of inorganic matter in the bones of the aged renders the bones more brittle, so that they break easily and heal with difficulty.

In children on account of a greater amount of organic matter, the bones are flexible, bend easily and do not break readily.

Describe the position and form of the thyroid cartilage.

The thyroid cartilage forms the greater portion of the framework of the larynx. It is located above the cricoid cartilage and consists of two lateral wings joined in front at an acute angle forming the prominence in the neck known as the "Adam's apple."

(a) Describe cartilage, and (b) tell where some cartilages of the body are found.

(a) For description, see above.

(b) Cartilages are found in the larynx, trachea, epiglottis and larger bronchi, in the external ear, the nose, in the attachments of ribs, the articular surfaces of bones and in the vertebral column.

Name the two kinds of bony tissue.

Bony tissue is known according to its structure as compact or cancellous.

Give the name of the outer covering and the inner lining of bone.

The membrane surrounding bone is called periosteum.

The membrane lining the long bones is called endosteum.

What is meant by a synchondrosis? Give an example.

A synchondrosis is a joint, usually immovable, in which bones are joined together by the means of cartilage. The sacro-coccygeal synchondrosis is an example.

State three functions of the skeleton.

1. Framework of body.
2. Protection to soft tissues and organs.
3. Attachments for muscles.

(a) How are the bones of the skeleton connected? (b) What are the costal cartilages? (c) Define synovia.

(a) The bones of the skeleton are connected by articulations. These articulations may be movable or immovable.

(b) The costal cartilages are flexible cartilages which connect the true ribs with the sternum. They are immovable joints.

(c) Synovia is a colorless stringy secretion which forms the lubricant for movable joints.

Describe the astragalus.

The astragalus or ankle bone, is an irregularly cubical shaped bone of the foot and ankle. It articulates above with the tibia and fibula, anteriorly with the scaphoid (or navicular) bone and inferiorly with the os calcis. The convex scaphoid articulation is called the "head," the constricted portion behind this the "neck," and the remainder of the bone the "body."

What is the malleus?

The malleus is a very small hammer-shaped bone which is the first of the three small bones found in the tympanic cavity, or middle ear. The head of the malleus articulates with the incus, and its handle is embedded in the fibrous structure of the membrana tympani.

State what you know about bone marrow.

Bone marrow is of two varieties, red and yellow. Yellow marrow fills the cavities of the long bones; red is found in the

Haversian canals and in the cells of cancellous bone. Yellow marrow is made up largely of fat and retiform tissue. Red marrow has fewer fat cells, many red blood cells and so-called marrow cells. These small nucleated cells, resembling embryonic red blood cells, are believed to be red blood cells in the process of formation, and the red marrow is believed to be chiefly concerned in the formation of red blood cells.

Define (a) condyle; (b) ossification.

(a) A condyle is a rounded eminence upon a bone.

(b) Ossification is the formation of bone through the deposit of lime salts and other mineral substances in cartilage or membranes.

What is the perichondrium?

The perichondrium is a fibrous vascular tissue which covers cartilage, especially at its junction with bone. It is continuous with the periosteum and is similar to it in structure.

Name a flat bone that develops entirely from membrane.

The parietal bone develops entirely from membrane.

Name a flat bone that develops, at least in part, from cartilage.

The sphenoid bone is ossified almost entirely in cartilage.

Name the canal that forms the centre of long bones.

What does this canal contain?

The canal in the centre of long bones is known as the medullary canal. It contains yellow marrow.

What are the Haversian canals and what do they contain?

The Haversian canals are little canals which run through compact bone and are seen under the microscope to contain minute blood-vessels and a little marrow. Circular lamellæ of bone separated by canaliculi surround each Haversian canal.

What is the general chemical composition of bone?

One-third of the weight of adult bone is made up of organic matter, two-thirds of mineral matter. The organic matter is almost entirely collagen, with blood-vessels, marrow and bone corpuscles. The mineral matter is mostly phosphate and carbonate of lime.

Name the covering of bone and its functions.

The covering of bone is called periosteum. Its function is to furnish the bone nutrition through its blood-vessels and to provide for its growth through its osteogenetic layer.

Distinguish between periosteum and perichondrium.

Periosteum is the vascular membrane surrounding bone and perichondrium is the membrane covering cartilage.

Classify bones according to shape.

Bones are classified according to shape into long, short, flat and irregular.

Long bones have a shaft of compact tissue and two extremities of cancellous tissue. The cavity filled with yellow marrow is called the medullary canal.

Short bones are made up of cancellous tissue with a thin compact covering, and have neither shaft nor extremity.

A flat bone is arranged in three layers, two of compact tissue with a layer of cancellous tissue between.

An irregular bone is one which does not conform to any of the foregoing descriptions.

Describe the structure of bone.

Bone is covered with periosteum externally, and long bones are lined with endosteum internally. The bone is composed of compact or hard bone and spongy or cancellous bone. The hard bone covers the surface of all bones and forms the shaft of the long bones. Cancellous bone is light and spongy and serves to combine lightness and strength. The medullary cavity, the hollowed-out shaft, and the interspaces in the cancellous bone are filled with marrow.

Give examples of each class of bones.

Long:	Femur, ulna.
Short:	Carpals, tarsals.
Irregular:	Vertebrae, sphenoid.
Flat:	Occipital, frontal.

Give a detailed description of the femur.

The femur is a long bone and consists of a rounded head which articulates with the acetabulum, a narrowed neck, and below this, two projections, the greater and lesser trochanters. The shaft con-

tains ridges for attachments of muscles. In its inferior portion the femur flattens and its lower extremity is divided into two bony masses called condyles, divided by a notch, with which it articulates with the tibia and patella.

Where is the largest bone in the body?

The largest bone is the femur and is situated in the upper half of the lower extremity. It articulates above with the pelvis and below with the large bone of the lower leg, the tibia.

To which class of bones does the patella belong?

The patella is a flat bone.

Name the three groups of ribs and state how many ribs are in each group.

The first seven ribs are called true ribs, because they are connected in front with the sternum by the costal cartilages. The eight, ninth and tenth are joined together in front, each to the one above, and are called false ribs. The eleventh and twelfth are not connected to anything in front and are called floating ribs.

Name the parts of the skeleton.

The parts of the skeleton are the skull, thorax, vertebral column, pelvic and shoulder girdle, upper and lower extremities.

(a) How many ribs have we? (b) How many bones in one arm? (c) In a forearm? (d) Thigh? (e) Leg? Give the names of these bones.

- (a) We have 24 ribs; 12 on each side.
- (b) The arm has one bone, the humerus.
- (c) The forearm has two bones, the radius and ulna.
- (d) The thigh has one bone, the femur.
- (e) The leg has two bones, the tibia and fibula.

Of how many bones does the adult skeleton consist?

The adult skeleton consists of 200 bones.

Name the bones entering into the formation of the chest.

The chest is made up of the sternum, articulating with 12 thoracic vertebræ and 24 ribs.

Name the bones of the upper extremity.

The clavicle and scapula making up the shoulder	2
The humerus in the arm	1
The radius and ulna in the forearm	2
The scaphoid, semilunar, cuneiform, pisiform, trapezium, trapezoid, os magnum and unciform in the wrist.....	8
The metacarpal bones of the palm (5) and the phalanges of the fingers (14)	19
	32

Name the bones of the lower extremity.

The femur in the thigh	1
The tibia and fibula in the leg	2
The talus, calcaneus, cuboid, navicular and 1st, 2d, and 3d cuneiform bones in the tarsus	7
The metatarsal bones	5
The 14 phalanges in the toes and digits	14
The patella, a sesamoid bone	1
	30

What is the framework of the body?

The framework of the body is the bony skeleton.

Name the principal eminences of bones in the body.

Canine, of superior maxilla.

Cruciate, of occiput.

Frontal, of frontal bone.

Parietal, of parietal bone.

Where are the following bones located? (a) hyoid (b) os calcis (c) atlas (d) axis (e) patella.

(a) Hyoid bone lies at the root of the tongue in the neck between the lower jaw and the thyroid cartilage.

(b) Os calcis (calcaneus) is the largest bone of the foot and forms the posterior third of the foot and the prominence of the heel.

(c) The atlas is the first vertebra and articulates with the base of the skull.

(d) The axis is the second vertebra and serves as a pivot upon which the head turns.

(e) The patella, or knee-cap, is a large sesamoid bone over the anterior surface of the knee joint.

Name the bones of the cranium.

The cranial bones are: 2 frontal, 1 occipital, 2 temporal, 2 parietal, 1 ethmoid, 1 sphenoid.

Give the names and situation of the cranial sutures.

Frontal suture, between the frontal bones; sagittal, antero-posteriorly between the parietal bones; coronal, between the frontal and the anterior margins of the parietal bones; lambdoidal, separating the posterior margin of the parietal from the upper margin of the occipital bones; temporal, between the upper margin of the temporal bones and the lower margin of the parietals.

(a) Locate the temporal bone. (b) What important organ is contained in this bone?

(a) The temporal bone is situated at the sides of the skull, articulating with the parietal bone above, the occipital bone behind, the sphenoid and malar or zygomatic in front.

(b) The ear is located in this bone.

Describe the normal curves of the spinal column.

The normal curves of the spinal column are four in number: cervical, thoracic, lumbar and sacral.

The cervical and lumbar curves are concave posteriorly—the “back of the neck” and “small of the back.”

The thoracic and sacral curves are concave anteriorly.

What set of organs does the female pelvis contain?

The genito-urinary organs of the female are in the pelvis.

(a) What three bones form the pelvic girdle? (b) What bones form the shoulder girdle?

(a) The two hip bones, or innominate bones—made up of the ilium, ischium and pubic bones—and the sacrum make up the pelvic girdle. To these may be added the coccyx.

(b) The shoulder girdle is made up of the clavicles and the scapulas joined together in front by the sternum.

Describe one of the bones of the upper extremity, giving its articulations and principal processes.

The humerus is one of the long bones of the upper extremity, and has a shaft with a medullary canal and two extremities.

The upper extremity shows a head, a neck and two tubercles. The rounded head articulates with the glenoid cavity of the scapula forming the shoulder joint. This head is joined to the shaft by a short anatomic neck. The greater and lesser tubercles, to which the rotator muscles are attached, lie below the neck. The shaft has three borders and three surfaces, the anterior and medial borders running from the greater and lesser tubercles. The groove for the long tendon of the biceps lies between them. The posterior surface contains a shallow groove for the radial nerve. The surgical neck is the upper portion of the shaft just below the tubercles.

The lower extremity curves slightly forward and presents two lateral projections, the medial and lateral epicondyles, of which the median is the longer. The articular surfaces for the elbow joint lie between the epicondyles, the trochlea articulating with the ulna, and the capitulum with the radius.

(a) How many sets of teeth has man? (b) What are these sets called? and how many in each set? (c) Of what substance are teeth composed?

(a) Man has two sets of teeth. (b) The first set, beginning eruption at about the 7th month and completed at the 30th month, consists of about 20 teeth, called the temporary teeth.

The permanent teeth begin to appear about the 6th year and have fully erupted by the 25th year. They are 32 in number.

(c) Teeth are composed of dentine, or tooth-bone, a peculiarly organized tubular bony structure. They consist of a crown, a neck and a root. The crown is the exposed portion and is covered with enamel. The neck is made up of dentine, while the root is covered with a bony substance called cement.

Name the bones of the face.

The bones of the face are:

Nasal	2	Palate	2
Lacrymal	2	Inferior turbinated	2
Zygomatic	2	Vomer	1
Superior maxillary	2	Inferior maxillary	1

Describe and locate the occipital bone.

The occipital bone is located at the back of the skull and is composed of a squamous and basal portion.

The squamous portion is rather flat and approaching a triangle in shape. It articulates with the parietal bones, forming the lambdoidal sutures. The most prominent portion of the back of the skull, the occipital protuberance, or inion, is located on the lower, central area of the squamous portion.

The basal portion, which articulates with the sphenoid, is curved forward to form the roof of the throat. The foramen magnum, or large opening, which permits the entrance of the spinal cord, lies well in the anterior part of the basal portion. On either side and a little in front of the foramen are the occipital condyles, which articulate with the atlas, the first of the vertebræ, to permit the nodding motion of the head. The inner surface of the occipital bone is grooved for the lateral sinuses and the superior longitudinal sinus.

What organ is contained in the cranial cavity?

The brain is contained in the cranial cavity.

Where is the foramen magnum?

The foramen magnum is in the anterior area of the basal portion of the occipital bone, and lies between the occipital condyles.

What do you understand by a vertebra?

A vertebra is one of the osseous segments of which the skeleton is made up. Anatomically, a vertebra consists of a body and an arch, joined together to form a ring of bone about a space known as the vertebral foramen. This foramen is occupied by the spinal cord and its membranes.

(a) Give the number of the vertebræ. (b) Name and locate the division containing the largest of them. (c) To what are the ribs attached?

- (a) There are 24 vertebræ, 7 cervical, 12 thoracic, 5 lumbar.
- (b) The largest vertebræ are the 5 lumbar, lying between the thoracic vertebræ and the sacrum.
- (c) The ribs are attached to the twelve thoracic vertebræ.

(a) Name the divisions of the vertebral column. (b) Name two features that give it elasticity.

(a) The vertebral column has three divisions: cervical, thoracic and lumbar.

(b) The intervertebral disks of fibro-cartilage, the intra-spinal ligaments and the elastic ligaments between the arches, and the presence of true joints between the articular processes are two features which give the vertebral column elasticity.

Describe the spinal column.

The spine is about 27 inches long. It is a strong, shock-proof and very flexible column which supports the head and allows freedom of motion to the trunk, combined with enough firmness for the attachment of the extremities. It is made up of 24 separate vertebræ, attached by ligaments, the sacrum, and the coccyx. The foramen, called the spinal canal, lies inside the column, posterior to the bodies of the vertebræ. From the spinal cord, in this canal, issue the spinal nerves through the intervertebral foramina.

The spine has four normal curves: cervical, thoracic, lumbar and sacral. The cervical and lumbar curves are concave posteriorly; the thoracic and sacral curves are concave anteriorly.

What effect has curvature of the spine on the general health?

Curvature of the spine, to any degree, impairs the general health by an interference with respiration, and in other ways.

JOINTS

Name the two kinds of joints and give examples.

Joints are movable or immovable.

In immovable joints the bones are held firmly together by fibrous tissue or cartilage. The bones of the skull are examples of the immovable joints.

Movable joints are joints in which the bones are connected loosely by ligaments which allow free play between the articular surfaces. The joints of the extremities are movable joints.

What are the connections of bony surfaces called?

The connections of bony surfaces are called joints or articulations.

Define a joint. (See above question.)

What structures enter into the composition of a movable joint?

The structures essential to a movable joint are: Articular bone, ligaments, synovial membrane with synovia and articular cartilage.

What membranes surround the cavities of movable joints?

Synovial membranes.

(a) Name the four divisions of joint articulations. (b) Mention an example of a ball-and-socket joint.

(a) Joint articulations are divided into:

Hinge (ginglymus).

Ball-and-socket (enarthrosis).

Pivot (trochoides).

Gliding (arthrodia).

(b) The shoulder is a ball-and-socket joint.

Mention an example of the other three varieties of joints.

Hinge—the elbow. Pivot—the head of radius. Gliding—the wrist.

What bone unites with the femur to form the hip joint?

The acetabulum of the hip bone, or os innominatum, unites with the femur to form the hip joint.

What kinds of joints are the shoulder, vertebræ, elbow, wrist?

Shoulder—ball-and-socket.

Vertebræ—gliding.

Elbow—hinge.

Wrist—gliding.

Describe the motion of a hinge joint. A ball-and-socket joint.

A hinge joint is well described by its name, as it swings in one plane from the level to an acute angle, producing flexion and extension.

A ball-and-socket joint gives motion in many planes and in all directions.

Name and locate the bones of the pelvis.

(See "Pelvic Girdle.")

MUSCLES

What is muscular tissue?

Muscular tissue is tissue made up of muscle cells, which when stimulated produce marked contractions.

How many kinds of muscles are there? Name them.

There are two main classes of muscles—voluntary and involuntary.

Give an example of each of the foregoing varieties of muscle tissue.

Voluntary muscle is found in all the skeletal muscles—as for instance, the deltoid.

Involuntary muscle is found in the stomach and intestines.

Name six important voluntary muscles.

The deltoid, biceps, diaphragm, erector spinæ, rectus abdominis, sartorius.

What are the pectoral muscles?

The pectoral muscles are two important breast muscles known as the pectoralis major and the pectoralis minor.

The pectoralis major has its origin on the sternal end of the clavicle and on the surface of the sternum and six upper ribs. It extends fanwise to its tendinous insertion on the crest of the greater tubercle of the shaft of the humerus. It draws the arm forward.

The pectoralis minor, lying under the major, takes origin from the 2d, 3d and 4th ribs and is inserted into the coracoid process of the scapula. It pulls the shoulder downward. The anterior thoracic nerve supplies both muscles.

What muscle flexes the forearm?

The biceps muscle is the most important flexor of the forearm.

What is the function of the biceps and the triceps muscles?

The biceps supinates and flexes the forearm.

The triceps extends the forearm, opposing the biceps.

What is meant by the term tonicity as applied to muscle?

Tonicity is the state of tonus, or slight continuous contractility, observed in normal living muscle.

Name the large muscle of the neck.

The trapezius is the largest muscle of the neck, and one of the largest in the body.

Describe ligaments, tendons, fascia, aponeurosis.

A ligament is a band of fibrous connective tissue extending from bone to bone.

A tendon is a band of fibrous connective tissue extending from muscle to bone.

Fascia is a band or sheet of thin connective tissue investing and connecting muscles.

An aponeurosis is a broad sheet of fibrous connective tissue connecting muscles.

Locate the diaphragm, the deltoid.

The diaphragm, a dome-shaped muscle, arises from two crura at the sides of the lumbar vertebræ and from arches of lumbar fascia and the lower boundary of the thorax. These origins are inserted into a flat central tendon.

The deltoid is a triangular muscle of the arm, the base being its origin on the spine and the acromion of the scapula and the lateral portion of the clavicle, the apex being its insertion into the lateral surface of the shaft of the humerus about its middle—the deltoid tubercle.

What other cavity besides the thoracic and pelvic cavities is contained in the trunk?

The abdominal cavity.

Name the two largest muscles of the back.

The erector spinæ and the latissimus dorsi are the two largest muscles of the back.

Describe a muscle of your own choosing. Give origin, insertion and function.

The masseter is a short muscle of mastication. Its origin is the zygomatic arch. Its insertion is the lateral surface of the man-

78 STATE BOARD QUESTIONS AND ANSWERS

dible. Its function is to close the mouth and move the jaw slightly forward.

What separates the thoracic and abdominal cavities and what openings are found in it?

The diaphragm separates the abdominal and thoracic cavities. In the posterior region of the diaphragm are three openings, one for the aorta, one for the vena cava, and one for the œsophagus.

What is meant by origin and insertion of muscles?

The extremity of the muscle which remains stationary when the other extremity moves is called its origin.

The extremity of a muscle which moves with its attachment is called its insertion.

Name the muscles of mastication.

The tongue, buccinator, masseter, temporal, internal pterygoid and external pterygoid.

(a) Locate the triceps muscle. (b) What is the function of the deltoid?

(a) The triceps muscle is located in the posterior aspect of the upper arm.

(b) The deltoid muscle assists in raising the arm laterally from the body.

Name the muscles of the abdomen.

External oblique.

Quadratus lumborum

Internal oblique.

Rectus abdominis.

Transversalis.

What muscles are important in maintaining the arch of the foot?

The intrinsic or small muscles on the sole of the foot.

Describe the diaphragm.

The diaphragm is a dome-shaped musculo-fibrous partition which separates the thoracic and abdominal cavities. The upper convex surface forms the floor of the thorax and is in relation with the pleura, pericardium and chest wall. The lower concave surface forms the roof of the abdominal cavity and is in relation to the stomach, liver and spleen. It arises from the ensiform

cartilage, the lower six ribs and from the lumbar vertebræ and is inserted into a central tendon.

Name two principal muscles of the arm.

The biceps and triceps are the principal muscles of the arm.

How are muscles attached to the skeleton?

Muscles are enclosed in sheaths of dense connective tissue called fascia, and in most cases this fascia is prolonged beyond the muscle into a broad band called an aponeurosis, or by a tough, white cord called a tendon. The aponeurosis, or tendon, attaches the muscle to the bony skeleton in most cases; occasionally the red muscle tissue is attached directly.

Name (a) long muscle of the leg, (b) flat muscle of the back, (c) one muscle of the abdomen, (d) one muscle of the chest.

- (a) Long muscle of the leg, tibialis anticus.
- (b) Flat muscle of the back, trapezius.
- (c) Muscle of the abdomen, obliquus externus.
- (d) Muscle of the chest, pectoralis major.

What is the popliteal space?

The popliteal space is a diamond-shaped space behind the knee-joint. The floor is formed from above downward by the lower end of the femur, the posterior ligament of the knee-joint and the popliteus muscle. The upper triangle of the diamond is rounded externally by the biceps tendon and internally by the semi-membranosus and semi-tendinosus muscles. The lateral and medial heads of the gastrocnemius form the boundaries of the lower triangle. The space contains the popliteal artery and vein and peroneal nerves.

Give the name and origin and insertion of a voluntary muscle situated (1) in the neck, (2) in the abdomen, (3) in the upper arm, (4) in the lower leg, (5) in the jaw.

Muscle	Origin	Insertion.
(1) Sterno - cleido mastoid.	Clavicle & sternum.	Mastoid portion of temporal bone.
(2) Rectus abdominis.	Pubic bone.	Fifth, sixth and seventh ribs, cartilaginous portion.

- | | | |
|--------------------|---|--|
| (3) Deltoid. | Inner third of clavicle, and acromi-um process and spine of the scap-ula. | Outer aspect of mid-dle portion of shaft of humerus. |
| (4) Gastrocnemius. | Lower end of femur. | Tuberosity of the cal-caneus. |
| (5) Masseter | Zygomatic arch of superior maxilla. | Mandibular portion of inferior maxilla. |

Tell briefly where the following muscles are found: (a) latissimus dorsi; (b) deltoid; (c) sternomastoid.

(a) The latissimus dorsi muscle is the "broad muscle" of the back. It covers most of the erector spinæ and a great portion of the back of the trunk and is inserted fan-like into the crest of the lesser tubercle of the humerus.

(b) The deltoid is a triangular muscle with its base at the clavicle and scapula. It forms a sort of cup over the shoulder-joint and is inserted into the lateral aspect of the shaft of the humerus on the deltoid tuberosity.

(c) The sterno-cleido-mastoid extends to the mastoid process behind the ear from the sternum and a portion of the clavicle.

Name the longest muscle in the body.

The erector spinæ is the longest muscle in the body.

What is the chief respiratory muscle?

The diaphragm is the chief respiratory muscle.

What is the general function of the orbital muscles?

The general function of the orbital muscles is to roll the eye-balls upward, outward and inward, and to open and close the eyes.

What muscle lifts the upper arm in an outward and up-ward direction from the body?

The deltoid.

RESPIRATORY ORGANS

Name the respiratory organs.

The respiratory organs are the nose, pharynx, larynx, trachea, bronchial tubes and lungs, the bony thorax and its muscles, especially the diaphragm, and the pulmonary blood-vessels.

What vessels convey blood from the lungs to the heart? In what particular do they differ from other vessels carrying blood to the heart?

The pulmonary veins carry blood from the lungs to the heart.

They differ from all other veins in the fact that they carry arterial blood to the heart, while the systemic veins carry venous blood.

What is the larynx?

The larynx is the cartilaginous voice-box lying between the base of the trunk and the trachea—the “Adam’s apple.”

Describe the chest.

The chest, or thorax, is a cage-like structure with the spinal column at the back, the sternum in front, and the ribs connecting the former with the latter. The intercostal muscles fill the spaces between the ribs, and the muscular diaphragm forms the floor. The pectoral muscles cover the front of the chest, the anterior serratus muscles the side, and the back muscles the posterior portion. The shoulder girdle, consisting of the clavicle in front and the scapula behind on each side, is held in position by several muscular attachments. The capacity of the chest is increased by the action of the intercostal muscles in pulling the ribs upward and by the action of the diaphragm in contracting downward.

The mammary gland is external, lying in the superficial fascia between the 3d and 5th ribs.

The superior opening of the chest transmits the trachea, œsophagus and many large vessels, as the carotid arteries and jugular veins, and several important nerves, as the pneumogastric.

The diaphragm has three openings, one for the aorta and thoracic duct, one for the inferior vena cava and a third for the œsophagus and vagus nerves.

The chest is lined by the pleura, a serous membrane, which is reflected over the diaphragm and the viscera.

What organs does the thorax contain?

The thoracic viscera and the œsophagus, trachea and bronchi, lungs and heart.

Describe and locate the pleura.

The pleura is a serous membrane consisting of a single layer of endothelial cells lying on a base of fibrous tissue. It has

numerous small openings called stomata which secrete a small quantity of a watery albuminous secretion called serous fluid. The pleura lines the walls of the thorax, is reflected over the base of the heart, great vessels and pericardium and on the diaphragm.

How many lobes has each lung? Name them.

The right lung has three lobes, upper, middle and lower; the left lung has two lobes, upper and lower.

Give a concise description of the lungs.

The lungs are two in number, the right and left. They are situated in the right and left sides of the thorax, respectively, in the space enclosed by the ribs. They are somewhat conical in shape, the flattened apex rising on inflation about an inch above the clavicle, the base resting on the diaphragm. The right lung is broader than the left and has three lobes, upper, middle and lower. The left lung has two lobes, upper and lower.

The lung substance is made up of lobules, each lobule being the termination of a small bronchus, which branches like the terminal branches of a tree. These bronchi grow finer until they terminate in almost transparent air-cells, which are in turn surrounded by a mesh of fine capillary blood-vessels, nerves, and lymphatics and elastic tissue.

Locate the (a) larynx, (b) pharynx, (c) trachea.

(a) The larynx is situated below the hyoid bone, in front of the lower part of the pharynx, and projects slightly forward in the neck.

(b) The pharynx is the arched space behind the nose, mouth and larynx.

(c) The trachea is a flexible tube, about one inch in diameter and four and one-half inches long, extending from the larynx to the fourth thoracic vertebra.

THE HEART AND BLOOD-VESSELS

Name the organs of circulation.

The organs of circulation are the heart and blood-vessels.

Briefly describe the heart along the following lines: (a) location in thorax, (b) number, name and location of valves, (c) number, name and location of cavities. (d) Name vessels

entering heart, tell which side of the heart they enter and what kind of blood they carry. (e) Name vessels leaving the heart and tell which side of the heart they leave and what kind of blood they carry.

The heart is a hollow, muscular organ, somewhat conical in shape and located in the thorax behind the sternum and left ribs, the base being behind the sternum at the junction of the 2d rib; the apex somewhat internal to the nipple and in the space between the 5th and 6th ribs. The base is pointed upward toward the right shoulder, the apex downward toward the left lower ribs.

(b) The heart has 4 valves: the tricuspid, between the right auricle and ventricle; the mitral, between the left auricle and ventricle; the pulmonary, at the opening of the pulmonary artery; and the aortic, at the opening of the aorta.

(c) There are 4 cavities in the heart. The right auricle is at the upper right pole of the heart, and receives the superior and inferior vena cava and the coronary sinus.

The left auricle is at the upper left pole of the heart, receiving the pulmonary veins.

The right ventricle is the lower right portion of the heart, lying mostly behind the sternum, and gives origin to the pulmonary artery.

The left ventricle is the lower left portion of the heart, outer border beginning at the second interspace near the sternum and continuing outward in a curved line to the apex in the fifth interspace $\frac{1}{2}$ inch internal to the nipple.

(d) The superior and inferior vena cava and the coronary sinus open into the right auricle, and carry venous blood.

The 3 or 4 pulmonary veins empty from the general circulation into the left auricle, and carry arterial blood from the lungs.

(e) The aorta leaves the left ventricle and carries arterial blood to the general circulation.

The pulmonary artery leaves the right ventricle and carries venous blood to the pulmonary circulation.

What is the bundle of His?

The bundle of His is the name given to a number of special heart-muscle cells which are aggregated into a column or bundle, and act as a connecting path for the transmission of contraction from the auricles to the ventricles of the heart.

What is the coeliac axis?

The coeliac axis is a short artery that rises from the abdominal aorta just below the diaphragm, and immediately divides into the left gastric, the hepatic and the splenic arteries.

(a) Name the large arteries of the head and upper extremities. (b) What arteries supply the following: (1) lungs; (2) kidneys; (3) liver; (4) spleen; (5) stomach?

(a) The large arteries to the head are: two common carotids, two internal and external carotids. The upper extremities are supplied by the subclavian, axillary and brachial arteries which are really only one artery each part of which takes a name from its location.

(b) 1. Bronchial arteries.

2. Renal arteries.

3. Hepatic artery, a branch of the coeliac artery.

4. Splenic.

5. Left and right gastric, gastro-duodenal, left gastro-epiploic.

What form of muscle-fibre is found in the heart?

Cardiac muscle is a muscle-fibre containing some of the characteristics of both striated and non-striated muscle-fibre. It is made up of blunt-shaped, branching cells with a single oval nucleus, and has transverse striations when observed under the microscope.

What is meant by the lesser circulation?

The lesser circulation is the pulmonary circulation.

Give the pulmonary circulation.

The blood to the lungs is sent through the pulmonary artery from the right ventricle. Being aerated in the vesicular capillaries, it is collected by the venous radicles and returned to the left auricle by the pulmonary veins. From this it enters the left ventricle and passes to the systemic circulation by way of the aorta.

What is the pericardium?

The pericardium is a fibro-serous sac loosely enclosing the heart. The layer which is closely reflected over the heart is called the epicardium or visceral layer. It passes up over the aorta and pulmonary arteries for about one inch and then is sharply

reflected outward to form the sac of parietal layer which encloses the organ and attaches to it between the diaphragm and the great vessels. The interior of the sac is covered with a layer of endothelium, and a small quantity of serous fluid acts as a lubricant between the parietal and visceral surfaces.

What are the functions of the capillaries?

The capillaries are the seat of a continuous osmosis, giving out renovating substances to the tissues and absorbing waste products from tissue spaces. Food products are absorbed by them in the alimentary canal; oxygen is taken up by them in the lungs and carbon dioxide is excreted; waste products are deposited by them in the tubules of the kidneys, and to glandular organs are brought by them the material from which secretion is elaborated. They are the most widely distributed and most important elements in the circulatory system.

How many kinds of blood-vessels are there?

Arteries, arterioles, capillaries, veins.

What blood-vessels connect the arteries and veins?

The capillaries.

What membrane forms the covering of the heart?

The pericardium.

What two large blood-vessels carry venous blood to the heart?

The superior and inferior vena cava.

What is the one most marked structural difference between red blood cells and white blood cells?

Red blood cells have no nuclei. White blood cells have each one nucleus or several nuclei.

What are the functions of the pericardium?

To protect the delicate mechanism of the heart, and facilitate its movements by furnishing a smooth surface with a minimum of friction.

Name three systems of circulation and the principal blood-vessels of each.

The systemic circulation; principal vessel, the aorta.

The pulmonary circulation: principal vessel, pulmonary artery.

The portal circulation: principal vessel, the portal veins.

Where would you make pressure in a lacerated extremity if arterial hæmorrhage occurred? Why?

Pressure should be made between the spouting vessels and the trunk, because the source of the blood-stream is coming from within outward.

Give the arterial circulation from the left ventricle to the right wrist.

The blood leaving the left ventricle follows the following course:

Aorta to innominate, to subclavian, to axillary, to brachial, to radial and ulnar.

Give names of outer covering and inner lining of the heart. Name five arteries where the pulse may be taken.

Pericardium—outer covering of heart.

Endocardium—inner lining of heart.

Pulse may be taken at the

Facial artery.

Temporal artery.

Brachial artery.

Radial artery.

Femoral artery.

What vessels convey the blood from the lungs to the heart? In what particulars do they differ from other vessels carrying blood to the heart?

The pulmonary veins carry the blood from the lungs to the heart. The pulmonary artery which carries venous blood from the heart to the lungs is a single large vessel with the structure of an artery. The pulmonary veins which carry arterial blood from the lungs to the left auricle of the heart are usually two in number on each side and are typically venous in structure.

Locate the femoral, temporal and radial arteries.

The femoral artery is a continuation of the external iliac passing through the femoral trigone and the adductor canal on the inner aspect of the thigh, to the popliteal space, where it becomes the popliteal artery.

The temporal artery is one of the two terminal branches of the external carotid, the other being the internal maxillary. It passes through the parotid gland and across the zygoma to the temple, where it supplies numerous branches to the scalp.

The radial artery is one of the branches of the brachial which divides at the elbow into the radial and ulnar. It runs on the radial side of the arm in front of the radius and winds back at the wrist to form the deep palmar arch in the palm of the hand.

Name two important arteries of the forearm.

The ulnar and radial arteries.

Where should pressure be made to control arterial bleeding below the knee?

In the popliteal space, by acutely flexing the knee over a compress placed in the space.

Name the artery to press against, and the location where the pressure is to be applied, when the bleeding point is in the (a) Thigh (b) Side of head (c) Palm of hand.

(a) For hæmorrhage in the inner side of the thigh press against the femoral artery over the femur.

(b) For hæmorrhage in the upper temporal region compress the temporal artery against the superior maxilla in front of the external ear.

(c) For hæmorrhage in the palm, compress the radial artery against the radius at the wrist, and the ulnar artery over the ulna on the opposite side of the wrist.

THE LYMPHATIC SYSTEM AND GLANDS**Locate the thyroid gland and briefly describe it.**

The thyroid gland is a ductless gland situated in the anterior portion of the neck, just below and enveloping the larynx and in front of the trachea. It is made up of two lateral lobes on each side of the trachea, and a smaller connecting portion called the isthmus.

The lateral lobes are from 1 to $1\frac{1}{2}$ inches wide, and extend up on the lateral surfaces for about 2 inches, enveloping the larynx. The middle lobe when present extends from the isthmus upward in front of the larynx. The thyroid gland substance is made up of closed sacs containing a jelly-like colloid substance. The lobules are encircled by a mesh of capillaries, branches of the thyroid arteries, through which the gland's internal secretion is absorbed.

What glands secrete the following: (a) saliva, (b) pancreatic juice, (c) bile, (d) gastric juice?

(a) Saliva is secreted by the sub-maxillary, sublingual and parotid glands.

(b) Pancreatic juice is secreted by the pancreas.

(c) Bile is secreted by the hepatic cells of the liver.

(d) Gastric juice is secreted from the peptic and acid glands in the cardia of the stomach.

Of what does the lymph vascular system consist?

The lymph vascular system consists of the lymph vessels and lymph glands, both deep and superficial.

What does the thoracic duct contain? Into what does it empty?

The thoracic duct contains lymph from the left side above the diaphragm, and all parts below the diaphragm except the upper surface of the liver.

The thoracic duct empties into the subclavian vein at its junction with the left internal jugular.

Where is the right lymphatic duct?

The right lymphatic duct is a short vessel about $\frac{1}{2}$ an inch in length, which empties into the right subclavian vein at its junction with the right internal jugular.

Name two sources of lymph.

Lymph is derived from the transuded serum in the capillary circulation, and also as a result of the complex chemical changes in the body tissues.

Locate the lacteals.

The lacteals are the lymph vessels found in the mesentery, so called because the fluid contained in them is milky, as a result of absorption of food products in the small intestine.

Where is the parotid gland located? What is its duct called?

(a) The parotid gland is located at the side of the face immediately below and in front of the external ear.

(b) Stensen's duct from Steno or Stensen, a Danish anatomist.

DUCTLESS GLANDS

Locate the suprarenal bodies. What do they secrete?

The suprarenal bodies, as the name implies, are situated upon the upper pole of each kidney.

The suprarenal bodies secrete two substances, adrenin from the medulla of the gland and cholin from the cortex. Adrenin aids in keeping the blood vessels in a partial state of tone. Cholin produces a partial relaxation of the blood vessels. Both substances together aid in keeping the blood vessels in the proper degree of tone.

Locate the thymus and parathyroid glands.

The thymus gland is located partly in the thorax, resting upon the pericardium and extends up into the neck, to the sides of, and in front of the trachea.

The parathyroid glands are located between the capsule and the posterior portion of the lateral lobes of the thyroid gland.

ORGANS OF DIGESTION

Name the nine divisions or regions of the abdomen.

The nine regions of the abdomen are:

Epigastric, umbilical, hypogastric.

Right hypochondriac, lumbar and iliac.

Left hypochondriac, lumbar and iliac.

Of what does the digestive apparatus consist?

The digestive apparatus consists of the mouth, pharynx, cesophagus, stomach, intestine, and the glands which secrete the digestive fluids.

What part does the tongue take in digestion?

The tongue aids in mastication and deglutition, and is the organ of taste.

What organs make up the digestive system?

(See foregoing "Digestive Apparatus.")

What organs are in the abdominal cavity?

The abdominal organs are the stomach, intestines, liver, spleen, pancreas, kidneys and adrenals.

Name the main divisions of the digestive tract, and the digestive fluid found in each.

Name	Digestive Fluid
The mouth	Saliva.
The stomach	Gastric juice.
Small intestines	Pancreatic juice and bile.
Large intestines	Succus entericus.

Briefly describe the stomach.

The stomach lies just below the diaphragm in the epigastrium. It is retort-shaped, about 11 inches long and 8 inches wide at its wider end. Its capacity is about 2 pints; 5 pints when greatly dilated. The stomach has two surfaces—the anterior and posterior; two borders or curvatures, the upper border, or lesser curvature, and the lower, or greater curvature (about 5 and 20 inches in length respectively); two extremities, the left, or larger end, called the cardiac end, or fundus, the right or smaller end, the pyloric extremity; two orifices, at the left, the œsophageal orifice, at the right, the pyloric orifice, both guarded by circular sphincters.

The structure of the stomach from within outward consists of four coats, the mucous, submucous, muscular and serous.

The mucous coat is lined with columnar epithelium and heavily dotted with secreting glands, those in the cardia secreting pepsin, hydrochloric acid and rennin as well as mucus. This epithelium lies on a basement membrane over a muscularis mucosa. This layer lies in rugæ or folds when the stomach is flaccid.

The submucosa contains loose elastic tissue, blood-vessels and nerves, the latter in a dense plexus. The muscular coat consists of three layers, the outer longitudinal, middle circular and inner

oblique—most noticeable at the cardia. The middle layer forms the sphincter-like rings at the œsophageal and pyloric openings. A plexus of nerves is found between the muscular layers.

The serous coat is the peritoneum, a typical serous membrane.

The blood supply comes from the gastric branch of the celiac stem, branches running along the greater and lesser curvatures and anastomosing freely.

The nerve supply comes from the pneumogastric and the sympathetic systems.

What important openings does the stomach contain?

(See foregoing question.)

Name the divisions of the large intestine.

The large bowel begins as a dilated pouch, the cæcum, from which the worm-like vermiform appendix forms a narrow tube, ascending on the right side of the abdomen; it is called the ascending colon; turning here, at the hepatic flexure it becomes the transverse colon; making another short turn in the left upper abdominal region, the splenic flexure, it descends, the descending colon, forming at its lower end the sigmoid flexure and ending at the pelvis in the rectum.

Give a brief description of the liver.

The liver lies directly under the diaphragm and measures about 7 inches in height, and about 11 or 12 inches from side to side. It is dark reddish in color, almost covered with a coat of peritoneum, excepting at its diaphragmatic attachment. Under the peritoneum lies the dense capsule of Glisson. This capsule ends in divisions which separate the liver into five lobes, marked out by fissures, and the lobes in turn are divided into lobules.

The lobules are in turn made up of hollow cords of liver cells surrounded and pierced by capillaries, lymph vessels and minute ducts. These minute ducts converge to form the hepatic ducts which in turn form the main hepatic duct which unites with the cystic duct from the gall-bladder to form the common bile-duct.

What vessels supply the liver?

The hepatic artery supplies the connective tissue of the liver and anastomoses with the branches of the portal vein in the liver

lobule. The portal vein sends minute capillaries into the lobules, carrying protein and glucose to the hepatic cells.

What is the weight of the liver?

The liver is 2.85 per cent. of the full weight of an adult; about three and a half to four and a half pounds.

Where is bile secreted and how does it get into the intestines?

Bile is secreted in the cells of the liver. It is stored in the gall-bladder and when needed it passes out of the gall-bladder by the cystic duct into the common bile duct. The common bile duct joins the pancreatic duct to form one duct called the ampulla of Vater. The ampulla of Vater empties into the duodenum.

Describe and locate the gall-bladder.

The gall-bladder occupies a fissure on the inferior surface of the liver near its anterior edge. It is a pear-shaped sac about 3 inches long, partially covered with peritoneum. It consists of mucous, submucous, muscular and serous layers and contains a variable quantity of bile. The orifice of the cystic duct is the only opening in the gall-bladder. This duct unites with the hepatic duct from the liver to form the common bile-duct.

Describe the peritoneum.

The peritoneum is the largest serous membrane in the body covering the entire abdominal parietes (the parietal peritoneum) and is continued over the viscera (the visceral peritoneum). The space between the parietal and visceral peritoneum is the peritoneal cavity. The free surface of the peritoneum is lubricated with a serous fluid so that the viscera can move freely without friction. In the male the peritoneum is a closed sac, but in the female the sac communicates with the exterior through the free ends of the uterine tubes.

What is chyle?

Chyle is the liquid found in the lymphatics of the small intestine during digestion. It is a milky, alkaline liquid made up of lymph mixed with globules of emulsified fat.

What is the size of the stomach and its capacity?

(See question: "Describe the Stomach.")

State briefly how the products of digestion are conveyed to the blood.

Intestinal capillaries and veins absorb soluble food products (proteins, sugars, water and salts) and carry them to the portal vein.

Hepatic capillaries carry the food-laden blood to the inferior vena cava.

The intestinal lymph capillaries absorb emulsified fat from the lymph spaces of the intestine and carry it to the receptaculum chyli and the thoracic duct.

The thoracic duct discharges lymph and chyle into the left subclavian vein, which in turn empties into the superior vena cava.

The two venæ cavæ empty the food-laden blood into the right auricle. It passes thence to the right ventricle, through the lungs and back to the left auricle via the pulmonary veins. From here it passes to the left ventricle and by way of the aorta to the general circulation.

Describe the alimentary canal. Name divisions of same.

The alimentary canal is a tube lined with epithelium and supplied with secreting glands, which begins at the mouth and ends at the rectum, the entire canal with its accessory organs and glands constituting the digestive system. The alimentary canal is divided into the mouth, pharynx, œsophagus, stomach and intestines. The accessory organs are the teeth, tongue and gall-bladder; the accessory glands are the salivary glands, pancreas and liver.

Locate the pylorus; where does it empty?

The pylorus is the small funnel-shaped part of the stomach where it joins the intestines.

It empties into the first part of the duodenum.

How long is the small intestine, and where does it begin and end?

The adult small intestine is about 22 feet long. It begins at the pylorus of the stomach and ends at the cæcum.

Name the divisions of the small intestine.

The duodenum, comprising the 10 or 12 inches of intestine attached to the stomach; the jejunum, 8 or 9 feet long, attached to

the duodenum; the ileum, the remaining portion which opens into the cæcum in the right lower portion of the intestine.

Where is the vermiform appendix?

The vermiform appendix is attached to the lower portion of the cæcum, below the attachment of the ileum. The cæcum is the dilated, pouch-like beginning of the large intestine. The appendix lies about half an inch behind a point on the abdomen midway between the umbilicus and the anterior superior spine of the ileum.

Locate the ileocæcal valve and give its use.

The ileocæcal valve guards the opening between the ileum and the cæcum. It consists of two folds of mucous membrane strengthened by fibrous tissue, and serves to prevent the backflow of intestinal contents from the large bowel.

Describe the pancreas and give its function.

The pancreas is a hammer-like structure made up of glandular tissue—a compound tubular gland—about 7 inches long, the head or thick portion curved to the right in the hollow of the duodenum, the tail reaching the spleen. The pancreas pours pancreatic juice, an alkaline solution of digestive ferments, through the pancreatic duct to the duodenum.

It also furnishes an internal secretion from its “islands of Langerhans,” to the blood.

GENITO-URINARY ORGANS

† (a) Name in order the different portions of the uriniferous tract including the kidney. (b) What is the function of the kidney?

(a) The 2 kidneys, 2 ureters, bladder and urethra.

(b) (See “Physiology.”)

Give a brief description of the kidney.

The kidneys, two in number, are situated on each side behind the peritoneum in the abdomen, resting on the quadratus lumborum muscle and extending from the 10th rib to within about 3 inches from the crest of the iliac bone. They are bean-shaped, the hollow portion known as the hilus turned toward the spine. They are 4 or 5 inches long and $1\frac{1}{2}$ inches wide.

The kidney is hollow, the cavity inside the hilus being called the sinus. It is covered by a dense fibrous capsule.

On section the kidney is seen to be made up of a dark substance at its outer border called the cortex and a lighter substance running out in pyramidal projections into the sinus called the medulla. These pyramids are made up of straight tubules which merge to form several larger tubules which empty at the apex of the pyramid.

The cortex is made up of the beginnings of these minute tubules—the Malpighian corpuscle—a thin layer of endothelium surrounding a tuft of minute blood-vessels, all enclosed in a fibrous capsule, forms the corpuscle. The tubule then becomes convoluted, descends and ascends, becomes convoluted again, and finally enters the pyramid. The cells in this system of tubes are glandular epithelium, and these tubes contain filtrates from glomeruli as urea, uric acid and other waste substances dissolved in water.

The ureter, enlarged to form the pelvis of the kidney, collects the product of the secreting tubules and conveys it to the bladder.

How are the kidneys connected with the bladder?

(See foregoing question.)

Give location and function of kidneys.

(See preceding questions.)

Name the large organs contained in the pelvic cavity.

In the male and female, the bladder and rectum.

In the female, the uterus, ovaries and Fallopian tubes.

What normal structures are found, and what structures may be found abnormally, in the inguinal canal?

The inguinal canal, being an opening from the abdomen to the scrotal region, contains normally in the male the spermatic cord and in the female the round ligament.

Under abnormal conditions a hernia or protrusion of the peritoneum may be found in the inguinal canal, more commonly in the male. This constitutes inguinal hernia.

Name the female organs of generation, external and internal.

(See "Gynæcological Nursing.")

Briefly describe the bladder. What is its capacity?

The urinary bladder receives and stores the urine excreted by the kidneys and is situated behind the pubes in the pelvis. In the female it lies between the pubes and the vagina and uterus; in the male, between the pubes and the rectum. It is covered with peritoneum above and posteriorly, but its anterior and inferior surfaces are intra-peritoneal. The bladder consists of a sac, of white elastic connective tissue enclosing several layers of non-striated muscle and lined with mucous membrane containing striated, flat, epithelium, and glands. This mucous membrane lies in irregular folds when the bladder is not distended.

The upper aspect of the bladder is called the vertex, or summit; the lower part, the base, or fundus. The openings of the ureters, two in number, are about one inch apart and also about the same distance from the internal orifice where the urine is expelled into the urethra. This triangle at the base is called the trigone. The internal orifice is enclosed in a quite thick circular layer of muscle fibres—the sphincter vesicæ. This portion of the bladder is known as the neck.

The average capacity of the bladder is about one pint.

THE NERVOUS SYSTEM AND ORGANS OF SPECIAL SENSE

Of what does the central nervous system consist?

Of the brain and spinal cord, and the cranial and spinal nerves.

What are sensory nerve fibres?

Sensory nerve fibres are fibres which convey impressions to the brain or nerve centres.

What are motor nerve fibres?

Motor nerve fibres are fibres which transmit motor impulses from the centres to muscles.

What nerves of special sense supply the following: (a) tongue, (b) eye, (c) ear, (d) nose?

- (a) Tongue, supplied by the hypoglossal nerve.
- (b) Eye, supplied by the optic nerve.
- (c) Ear, supplied by the auditory nerve.
- (d) Nose, supplied by the olfactory nerve.

Why is the brain the most interesting organ in the body?

Because it is the organ of thought and intellect.

Name the different parts of the brain.

The cerebrum, the cerebellum, the pons Varolii and the medulla oblongata make up the brain.

Name the three coverings of the brain.

The coverings of the brain from without inward are (1) the dura mater, (2) the arachnoid, (3) the pia mater.

Describe the cerebrum.

The cerebrum is oval, flattened at its base, composed of a cortex of gray matter and a medullary portion of white matter. It is made up of nerve cells and fibres supported by neuroglia, the gray matter being largely cells, the white matter largely fibres. The brain stem is continuous with the spinal cord. The surface of the brain is marked by convolutions which are deeper in maturity than in childhood. The cerebrum is the largest portion of the brain. It is divided into right and left hemispheres by the longitudinal fissure. The corpus callosum connects the two hemispheres.

Each hemisphere is marked off by deep fissures into lobes—the frontal, parietal, occipital and temporal. The basal ganglia—the optic thalamus, and the lenticular and caudate nuclei—lie in the white substance near the base. The white matter between the optic thalamus and the nuclei constitutes the internal capsule, made up of fibres which run to the cortex and from the cord. The hemispheres are hollow and contain the lateral ventricles.

By what means is the brain connected with the outside of the body? With the viscera?

The brain is connected with the outside of the body by means of the central nervous system. With the viscera by the sympathetic nervous system.

Give a brief description of the spinal cord and state its function.

The spinal cord is composed of white and gray matter, composed respectively of nerve cells and nerve fibres, and is from sixteen to seventeen inches long. It has a diameter of three-

fourths of an inch and is divided into lateral halves by an anterior and posterior fissure. Its function is to transmit or relay messages from the periphery to the brain, or vice versa.

What are nerves?

A nerve is a long, medullary cord, connected with the brain or spinal cord and forming the channel or instrument by which sensation, volition, or vital influence is carried from the periphery to the central nervous system, or from the central nervous system to the periphery. Every nerve fibre is a prolongation of a nerve cell.

Locate the following nerves: intercostal, sciatic, radial, spinal.

The intercostal nerves are located in the thoracic wall.

The sciatic nerve is located in thigh and leg.

The radial nerve is located in arm and forearm.

The spinal nerves arise from the spinal cord and pass out between the vertebræ.

How are nerves classified as to function?

Into afferent nerves—those transmitting impulses toward the cord or brain, *i.e.*, sensory nerves; and efferent nerves—those transmitting impulses away from the cord, *i.e.*, motor nerves.

What is the largest in distribution of the cranial nerves?

The pneumogastric nerve has the largest distribution of the cranial nerves.

What is the special nerve of the sense of sight?

The optic nerve is the special nerve of the sense of sight.

Name the nerve systems of the body.

The body has the cerebro-spinal system of nerves, and the sympathetic system.

How many pairs of spinal nerves are there?

There are 31 pairs of spinal nerves.

How many pairs of cranial nerves are there?

There are 12 pairs of cranial nerves.

Which of the cranial nerves is distributed to the heart, lungs and stomach?

The pneumogastric, or vagus nerve, also known as the 10th cranial nerve, has the above distribution.

By what name is the 5th cranial nerve known?

The 5th cranial nerve is called the trifacial or trigeminus.

Give a brief description of the 5th nerve and its function.

The trifacial is the important sensory nerve of the face and throat, but it has also some motor fibres, and has therefore two roots, sensory and motor. The sensory root possesses a large ganglion—the semilunar or Gasserian ganglion, lying within the skull. To this ganglion run three divisions, the ophthalmic, maxillary and mandibular nerves. The ophthalmic division lies in the orbit which it supplies, in common with the eyelids and side of the nose. The maxillary branch appears at the infraorbital foramen and gives sensation to the upper teeth, cheek and temple. The mandibular branch lies in the infratemporal fossa and supplies sensation to the lower teeth and jaw. This branch is joined to the motor root, which supplies muscles of mastication. The anterior part of the tongue sends fibres to the mandibular branch.

What is the retina?

The retina is the inner nervous tunic of the eyeball comprising the expansion of the optic nerve, and constituting the perceptive or light perceiving structure of the eye.

Describe the human eye.

The eye is situated in the orbital fossa of the skull. The eyeball is a globular organ composed of three coats and divided into two cavities by an apparatus for controlling and refracting the light rays, namely, the ciliary body, lens and iris. The anterior cavity is divided into anterior and posterior chambers by the iris. The outer coat of the eyeball is the sclera, composed of tough fibrous tissue that gives form to the eyeball. This coat serves for the attachment of the muscles of the eye. It is continued in front by a highly modified coat of connective tissue, the cornea, which is transparent.

The middle coat is the choroid, which is composed largely of blood vessels. Anteriorly this coat merges with the ciliary body.

Attached to the ciliary body is the suspensory ligament which supports the lens and the muscles of the iris, which form the diaphragm controlling the amount of light admitted to the eye. The inner coat of the eye is the retina, composed of the highly specialized endings of the optic nerve. This coat possesses several layers of cells which connect with the terminal fibres of the optic nerve in the deeper parts of this lining. From this coat the fibres of the optic nerve converge toward a common centre, leaving the eyeball as a definite nerve.

Name the important parts of the middle ear.

The important parts of the middle ear are the auditory ossicles, tympanic membrane and opening of the eustachian tube.

What are the dorsal nerves? How many in number?

The dorsal nerves are the spinal nerves that issue from between the dorsal vertebræ—the thoracic nerves. There are 12 thoracic or dorsal nerves.

What are the functions of the sympathetic system?

The sympathetic nerves are the nerves of subconscious life. They supply the secreting glands, the coats of blood-vessels, and all involuntary muscles. The cardiac muscle is supplied by both the sympathetic and the vagus.

Name several functions of nerves.

Sensation, motion, and secretion are nerve functions.

Name two nerves of special sense.

The olfactory, the nerve of smell.

The auditory, the nerve of hearing.

Name and locate the longest nerve in the body.

The sciatic nerve in the thigh is the longest nerve in the body.

What parts do the sacral nerves supply?

The sacral nerves help to form the sciatic nerve and supply the viscera, the external genitals, some of the muscles of the pelvis, and the skin over the buttocks, thighs and groins.

Name five of the general systems of the body. Name one organ in each system.

<i>System</i>	<i>Organ</i>
1. Nervous system	Brain
2. Circulatory system	Heart
3. Digestive system	Stomach
4. Respiratory system	Lungs
5. Endocrine system	Thyroid

DEFINITIONS AND MISCELLANEOUS

Define: (a) Anatomy, (b) Osteology.

(a) Anatomy is the science which investigates the organization and structure of the body.

(b) Osteology is a study of bones of the animal skeleton.

Define histology.

Histology is the study of the microscopic structure of tissues and organs.

Do you consider anatomy and physiology necessary in a nurse's education? Give reasons.

Anatomy and physiology are necessary in a nurse's education because nursing is a branch of therapeutics, and therapeutics is based upon a knowledge of the causes of diseases. It is impossible to know the abnormal conditions of the body if the normal conditions are not first studied in anatomy and physiology.

Name the parts of a perfect living cell, and make a drawing of a cell if possible.

A perfect "cell" is usually of spheroidal shape, is made up of cytoplasm surrounded by a "cell membrane" or "cell wall," and contains within the cytoplasm a "nucleus."

In what two ways do cells reproduce?

Cells reproduce by "mitosis," also called karyokinesis, or direct division; and more rarely by "amitosis," or non-karyokinesis, also called indirect cell division.

What is neuroglia?

Neuroglia is the peculiar connective tissue which forms the supporting framework of the brain and spinal cord.

What is the difference between ligatures and ligaments?

Ligatures are strings of prepared catgut or silk, identical with the material used for surgical sutures and employed for the tying of blood-vessels in surgical operations.

Ligaments are the strong fibrous bands of tissue used to bind or closely connect any one structure of the body with another.

Give two different medical or surgical definitions of the noun "suture."

A suture in "anatomy" is a fixed or non-movable or dovetail joint, also known as a synarthrosis, in which bones are articulated by their edges. The sutures of the cranium are examples.

A suture in "surgery" is a properly prepared thread or string made up of catgut, silk, silkworm-gut or other suitable material intended to be used in sewing together separated pieces of body tissue.

What is the largest serous membrane in the body?

The peritoneum is the largest serous membrane in the body.

Name four coats of mucous membrane.

(1) Epithelium: This is the surface layer.

(2) Basement membrane: This is a layer of flat cells on which the epithelium rests.

(3) Corium: This is the layer of loose tissue containing blood vessels.

(4) Muscularis mucosa: This is a thin layer of smooth involuntary muscle.

What is the tentorium cerebelli?

The tentorium cerebelli is a fold of the dura mater which supports the occipital lobes of the cerebrum, and separates the cerebrum from the cerebellum.

What is meant by "accommodation" in respect to vision? Name three disorders of accommodation. What is meant by the term "the eye at rest"?

Accommodation is the process by which the eye automatically lengthens or shortens its focus, by increasing or decreasing the convexity of the lens varying with the distance of the object to be viewed, in order that a clear image of this object may appear on the retina.

Three disorders of accommodation are as follows:

"Hyperopia," in which the eye at rest focuses images behind the retina (far-sightedness).

"Myopia," in which the eye at rest focuses images in front of the retina (near-sightedness).

"Astigmatism," a disorder of accommodation due to irregularities of the cornea in which the focus varies in different meridians of the eyeball.

The term "the eye at rest," means the condition of temporary paralysis of the muscles of accommodation, brought about by the installation into the conjunctival sac of a solution of atropine or homatropine sulphate.

What is fatigue? What are its results?

Fatigue is a state of exhaustion produced by functional over-activity or by toxæmia. In muscle fatigue an excess of lactic acid is produced. In general fatigue of the body, a feeling of discomfort which is general and pronounced is the outstanding symptom.

What is Broca's convolution? What is believed to be its function?

Broca's convolution is the third left frontal convolution of the cerebrum. It is looked upon as the centre for speech. It is named after its discoverer, Paul Broca, Parisian surgeon (1824-1880).

What is the Eustachian tube?

The Eustachian tube is a membranous tube extending from the naso-pharynx to the middle ear.

Where is the circle of Willis? Sigmoid flexure?

The circle of Willis is an anastomosis of arteries forming a complete ring at the base of the brain encircling the hypophysis and the optic chiasm.

The sigmoid flexure is the lower end of the descending colon and lies in the pelvis in front of the sacrum. It is continued downward to become the rectum.

Define (a) Glenoid cavity. (b) Foramen ovale. (c) Turbinate bones.

(a) Glenoid cavity is the depression in the head of the scapula into which the head of the humerus fits.

(b) Foramen ovale is the foetal opening in the heart between the right and left auricles.

(c) Turbinate bones are the three bony eminences covered with mucous membrane on the lateral wall of the nasal fossae.

What is (a) the dorsal cavity; (b) the ventral cavity?

(a) The dorsal cavity is the neural canal, beginning in the cranium and ending at the coccyx.

(b) The ventral cavity is composed of the mouth, neck, thorax, abdomen and pelvis—the cavity lying in front of the spinal column.

What is the difference between rotation and circumduction?

Rotation—turning on its axis.

Circumduction—continuous circular movement.

What does the visual apparatus consist of? What accessory organs are concerned with protection of the eye?

The visual apparatus consists of the eyeballs, the optic nerves and the centres for vision in the brain.

The accessory organs of vision are (1) eyebrows, (2) eyelids, (3) conjunctiva, (4) lacrymal apparatus, (5) muscles of the eyeballs, (6) the fascia bulb.

What parts of the eye are incised in the removal of a cataract?

The operation of removing a cataract involves incision of the conjunctiva, the cornea, and the crystalline lens.

What are the two important structural layers of the skin and of what primary tissues are they comprised respectively?

The skin has two structural layers; the outer, the epidermis, made up entirely of stratified epithelium; the inner, the dermis, made up largely of connective tissues.

What do you understand by (a) the median line? (b) The word "distal"?

(a) The median line is an imaginary line drawn through the centre of the body longitudinally from head to feet.

(b) Distal applies to a part away from its source, *i.e.*, the hand is distal to the elbow; the elbow distal to the shoulder.

Locate the following in a general way: (a) mastoid, (b) tympanum, (c) hyoid bone, (d) uvula, (e) epiglottis, (f) tonsils.

(a) The mastoid is a process of bone located in the posterior part of the temporal bone.

(b) The tympanum or ear drum is located in the middle ear.

(c) The hyoid is a small bone at the base of the tongue.

(d) The uvula is above the root of the tongue, hanging from the soft palate.

(e) The epiglottis is above the larynx.

(f) The tonsils are located between the mouth and the pharynx between the glossopalatine and pharyngopalatine arches.

Where are the smooth or involuntary muscles found? Which one of the main divisions of the nervous system controls the involuntary muscles?

The smooth or involuntary muscles are found in the walls of the blood vessels, intestines and uterus.

The autonomic nervous system controls the action of involuntary muscles.

Char. of living protoplasm

1. Reproduction
2. Excitation
3. Irritability
4. Adaptation
5. Regeneration

Classes of tissues

1. Muscular
2. Connective
3. Nervous
4. Epithelial

Functional groups

Visceral

Notes. That is the
structure of diff animal

~~Atm~~

~~1022-1024~~

PHYSIOLOGY

DIGESTION

What do we mean by digestion?

By digestion is meant the physiological process by which foods are brought to a uniform consistence and temperature and acted on by ferments so as to allow them to be more easily absorbed.

Name the organs of alimentation.

The organs of alimentation are the mouth, œsophagus, stomach, and intestines.

What juices act on the food in the mouth and in the stomach?

Saliva acts on the food in the mouth.

Gastric juice acts on the food in the stomach.

Name the salivary glands and give their location.

The salivary glands are: the parotid gland, situated in front of each ear and overlapping both inside and outside the ramus of the lower jaw.

The submaxillary gland, situated inside the ramus of the lower jaw on both sides.

The sublingual gland, situated under the mucous membrane of the mouth on each side of the frænum.

The buccal follicles—numerous minute salivary glands, situated in the mucous membrane of each cheek.

What is the secretion of the salivary glands called?

Saliva.

What is the name of the ferment contained in saliva and what is its action?

The salivary ferment is called ptyaline. It is an enzyme having the power to convert starch into dextrose.

What are two processes of digestion? Which is the more essential?

Two processes of digestion are mechanical and chemical digestion. Chemical digestion is the more important.

What is the most important factor in oral digestion?

The most important factor in oral digestion is the mixture of the food with saliva.

What two secretions are necessary for gastric digestion?

Hydrochloric acid and pepsin, secreted by the acid and peptic glands, are necessary for gastric digestion.

Describe the functions of the so-called kitchen, dining-room, and the garbage box of the body.

The mouth and stomach, where the food is chopped up and prepared for digestion by mixing with saliva and gastric juice, may be looked upon as the kitchen of the body.

The small intestine, where the pancreatic juice and bile complete the digestion begun in the mouth and stomach by the saliva and gastric juice, and where the soluble and emulsified food products are rapidly absorbed, may be called the dining-room of the body.

The large bowel, especially its terminal portion, may be considered the garbage box of the body.

Which of the digestive juices has the widest action?

The pancreatic juice has the widest range of action.

Name the enzymes of the gastric juice and state function of each.

Pepsin and rennin. The former aids in the digestion of proteins and the latter in the digestion of milk.

What is the function of the stomach? Name its digestive ferments.

The function of the stomach is to store a certain portion of masticated food until it is fully acted upon by saliva, and then to mix this food with hydrochloric acid and pepsin, the digestive ferment, passing it on in small quantities to the duodenum. Rennin, a milk coagulant ferment, is also present in the stomach. Meats and albuminous substances are acted on by pepsin in the presence of hydrochloric acid and changed into the soluble peptones.

What physiological functions are performed by the liver?

- (1) Bile is formed.
- (2) Glycogen and fat are stored.
- (3) Urea, uric acid and other by-products are formed.
- (4) Red blood cells and hæmoglobin are broken up.
- (5) Certain poisons, as the aromatic compounds, are destroyed.

Name a secretion which acts upon the following: (a) carbohydrates, (b) proteins, (c) fats.

- (a) Amylopsin acts upon carbohydrates.
- (b) Trypsin acts upon proteins.
- (c) Lipase acts upon fats.

What is the difference between a secretion and an excretion?

A secretion is something taken from the blood stream to serve a useful purpose in metabolism—example, gastric juice; while an excretion is something taken from the blood stream which is no longer of any use to the body metabolism—example, urine.

Where is most of the food digested and absorbed?

In the small intestines.

Name and give the source and action of the various digestive juices.

<i>Name</i>	<i>Source</i>	<i>Action</i>
Saliva	Salivary glands of mouth	Changes starch into maltose
Gastric juice ..	Acid and peptic glands of stomach	Changes albumens into peptones
Pancreatic juice	Pancreas, emptying into duodenum	Fat-splitting, starch-splitting and protein-splitting ferments, steapsin, amylopsin and trypsin, emulsify fats, change starch to maltose and change albumins to peptones and aminoacids
Intestinal juice		Brunner's and Lieberkühn's glands in duodenum and intestines. Contains erepsin and invertase, continuing protein digestion and inverting sugars

What secretions combine to digest food in the intestines?

Bile and pancreatic juice, together with the succus entericus, combine to digest food in the intestines.

Name two diseases that would indicate an inflamed condition of the intestinal tract.

Gastritis and appendicitis would indicate an inflamed condition of the intestinal tract.

(a) Name three conditions which may retard digestion or check the flow of digestive fluids. (b) Name three conditions which are favorable for digestion when eating.

(a) Three conditions which may retard digestion are:

1. Worry and anxiety.
2. Fright.
3. Grief.

(b) Three conditions which are favorable for digestion when eating are:

1. Good food, well cooked and tastefully presented.
2. Freedom from worry.
3. Pleasant company.

(a) Name one serous membrane. (b) Name one organ lined by a mucous membrane.

(a) The pleura is a serous membrane.

(b) The stomach is lined by a mucous membrane.

What office is served in the digestive process by saliva? gastric juice? bile and pancreatic juice?

Saliva moistens food, facilitates mastication and converts starch into maltose.

Gastric juice converts albumin into soluble peptone, thus facilitating absorption.

Bile holds fat soaps in solution by its alkaline reaction, dissolves fatty acids, augments the fat-splitting ferment of the pancreatic juice, assists in emulsifying fat and stimulates peristalsis.

Pancreatic juice is alkaline in reaction and contains trypsin, which continues stomach digestion and further splits peptones into aminoacids; amyllopsin, which converts starch to dextrose, and dextrose to maltose; and steapsin, which splits fats to fatty acids

and glycerin, the fatty acids then combining with the alkali to form soluble fat soaps.

RESPIRATION

What constitutes a respiration and what is the ratio of respiration to the pulse?

Respiration consists of inspiration or drawing in of the air; expiration of the expelling of the air and the pause or rest period in between. The ratio between the respiration and pulse is one to four.

What are the primary objects of respiration?

To carry air to the lungs to supply oxygen to the blood and to carry away carbon dioxide which the blood brings to the lungs.

Where is the respiratory centre located?

The respiratory centre is located in the medulla oblongata.

What do you understand by external respiration? By internal respiration?

External respiration consists of the inspiration of fresh air to, and the expiration of alveolar from, the lungs.

Internal respiration is the term applied to the process in which the tissues take oxygen from the blood and give carbon dioxide to the blood.

When do the vocal cords give the origin of sound?

When the cords are made tense by a voluntary effort and an expiratory movement of the lungs causes them to vibrate, and these vibrations are in turn communicated to the surrounding air, a sound is produced which we call the voice.

On what does the loudness of the voice depend?

The loudness of the voice depends on the size and tension of the vocal cords and the velocity of the expiratory air current.

Define reserve air, complemental air, residual air, tidal air.

Tidal air is the quantity of air carried in an ordinary respiration without effort.

Complemental air is the quantity of air, in excess of the tidal air, which may be added by forced inspiration.

118 STATE BOARD QUESTIONS AND ANSWERS

Reserve air is the quantity of air in excess of the tidal air which may be expelled by forced expiration.

Residual air is the air which remains in the lungs after forced expiration.

Mention an important part the nose takes in respiration.

The nose furnishes a channel through which the inspired air is filtered and warmed.

Name the organs of respiration.

The organs of respiration are the nose, pharynx, larynx, trachea and lungs.

Why is mouth-breathing dangerous?

Because the air is taken into the lungs without its preliminary warming, moistening and filtration from dust, which takes place in the nose.

What change is wrought on the blood by respiration, and what quality of air most perfectly effects this change?

In respiration the reduced hæmoglobin carried by the red blood cell is changed to oxy-hæmoglobin.

Pure, fresh air most perfectly effects this change.

What is the average respiration rate of the normal adult?

The average respiration rate of the normal adult is about 18 a minute.

How does oxygen reach tissues of the body?

Oxygen reaches the tissues of the body through the blood stream, the oxygen being in loose chemical combination with hæmoglobin—oxy-hæmoglobin.

What controls the rate and rhythm of respiration?

The rate and rhythm of respiration are controlled by impulses sent out from the respiratory centre in the medulla oblongata.

What is the function of the broncho-pulmonary tract?

The broncho-pulmonary tract performs the function of respiration.

How many cubic feet of air space should be allowed each adult?

One thousand cubic feet of air space, the air being changed three times in an hour, is the ideal for each adult.

How much is the vital capacity of the adult lungs?

About 225 cubic inches is the average vital capacity of the adult lungs.

Mention some sources of impure air in the sick room.

Gas stoves, numerous gas lights, uncovered commodes or bed-pans containing urine or intestinal discharges and soiled bedding or dressings, either in the sick room or a communicating room will quickly contaminate the air of the sick room.

At what rate should artificial respiration be performed?

At the rate of 16 to 20 respirations a minute.



HEART AND BLOOD-VESSELS

What is the chief function of the veins and arteries?

The chief function of the veins and arteries is to carry the nutrient blood to the body tissues and organs through the arteries, and back to the heart through the veins, the capillary network spreading out between these classes of vessels.

What factors affect the frequency and strength of the heart action?

Size, age, sex, exercise, temperature of the blood and blood pressure.

Define the cardiac cycle.

The cardiac cycle is the period from the beginning of one systole to the beginning of the next.

What is the pulse?

The pulse is the perceptible shock or impulse transmitted to an artery by each successive systole of the heart.

Define normal pulse and mention some deviations from it.

The normal pulse in the adult beats from 72 to 80 times a minute, is moderately firm but compressible, regular in the force and rhythm of all its beats.

Abnormal conditions would be extreme slowness; extreme rapidity; high tension, or incompressible, pulse; low tension, or very compressible; irregular, in which the tension of the various beats varies, or arrhythmic, in which the beats are intermittent; dicrotic, in which a slight secondary pulse is felt between the primary beats.

At what temperature would you ordinarily keep a sick room? Of what advantage is a fireplace?

A sick room should be kept ordinarily at about 70° F. A fireplace furnishes an easy means of ventilating a room.

What is the rate of the respiratory act in the child and the adult?

The average respiratory rate in the newborn is about 40, at one year about 30, at 5 years about 25, at adult life about 18.

Of what is pure air composed? What are the characteristics of expired air?

Pure air is composed of about 20 per cent. of oxygen and 80 per cent. of nitrogen. About 0.4 per cent. of carbon dioxide is usually present, and traces of other gases, as argon.

Expired air contains about 16 per cent. oxygen, 4 parts carbon dioxide and 80 parts nitrogen.

Give the average pulse rate during infancy.

110 to 130 beats per minute is the pulse of infancy.

What is the average pulse in children from 8 years upward?

The average pulse in children at 8 years and over is 72 to 92 per minute.

What is the average adult pulse?

The adult male pulse is 60 to 70 beats to a minute.

The adult female pulse is 60 to 80 beats a minute.

Give briefly the plan of the circulatory system, beginning with the heart.

The blood enters the heart by way of the two large venæ cavæ, passes down to the right ventricle and out through the pulmonary artery to the lungs. Being oxygenated here, it returns by

way of the pulmonary veins to the left auricle, passes down to the left ventricle and thence by way of the aorta to the arteries of the body. The arch of the aorta sends two coronary arteries to the heart itself, the innominate artery branching into the right subclavian to the right upper extremity and right common carotid to the right head and neck, and the left common carotid, and left subclavian, to the left head and neck and left upper extremity. The thoracic portion of the aorta, extending from the 4th dorsal vertebra to the diaphragm, sends branches to the intercostal spaces, the intercostal arteries, also bronchial, pericardial, œsophageal and mediastinal branches. The abdominal aorta extends from the diaphragm to the lower border of the lumbar vertebra. It sends phrenic branches to the diaphragm and lumbar branches, corresponding to the intercostals, to the abdominal wall. The celiac artery divides into the gastric, hepatic and splenic arteries, the superior mesenteric supplies the small intestine, cæcum, ascending and transverse colon, the inferior mesenteric, the remainder of the large intestine, two renal arteries to the kidneys, the small adrenal arteries and the ovarian arteries in the female or spermatic arteries in the male. At the level of the lower borders of the 4th lumbar vertebra the aorta divides into the right and left common iliac, supplying by branches the pelvic organs and the lower extremity.

The various arteries subdivide until small arteries or arterioles are found, terminating in a fine mesh of capillaries. The capillaries in turn coalesce to form small venules, which, as the subdivisions decrease in number, become veins.

The inferior vena cava is formed by the union of the two common iliac veins at the right of the bifurcation of the abdominal aorta, and runs upward to the right of the aorta until it passes through the diaphragm and enters the right auricle. Branches corresponding to the aortic branches empty into this large vein as it passes upward.

The splenic, gastric and mesenteric veins unite to form the portal vein, a large vessel, 4 inches long, which carries blood to the liver, entering at the transverse fissure. Breaking up here into numerous fine branches, the portal blood is finally collected into the hepatic veins which empty into the inferior vena cava.

The venous blood from all the structures above the diaphragm, excepting the heart itself, is collected by the superior vena cava.

What is the purpose of (a) pulmonary circulation, (b) systemic circulation, (c) portal circulation, (d) foetal circulation?

(a) The purpose of the pulmonary circulation is to aërate the blood.

(b) The purpose of the systemic circulation is to carry oxygen to the tissues and to remove waste products.

(c) The purpose of the portal circulation is to carry the end products of digestion to the liver.

(d) The purpose of the foetal circulation is to carry nutriment to the foetus and to remove waste products of its metabolism.

How frequently does the heart receive and pump out blood?

The cyclic act of receiving and pumping out blood occurs in the adult heart about 72 to 80 times a minute.

Mention some differences in the structure of veins and arteries.

Arteries contain a larger amount of muscular and elastic tissue than veins and have no valves.

Veins contain less muscular and elastic tissue and more fibrous tissue than arteries. Many veins have valves.

Define systole, diastole.

Systole is the rhythmic contraction of the heart, consisting of the auricular and ventricular contractions.

Diastole is the rhythmic dilation, or resting period, of the heart, immediately following the systole.

Describe the lacteals, the lymphatics.

The lacteals are lymph vessels, similar structures to the other lymph vessels, but called lacteals because they carry the milky-looking chyle from the intestines through the mesenteric glands.

The lymphatics are of two varieties, lymph capillaries, like blood capillaries, consisting of a single coat of endothelium, and lymph vessels, composed of three coats, one elastic and two fibromuscular. These vessels are provided with numerous valves, which give them a beaded appearance.

What is the purpose of the lymphatics?

The lymphatics drain the tissue spaces of the body carrying the nutritive transudate lymph through numerous lymph nodes and emptying at last into the right lymphatic duct and the thoracic duct.

What is the special function of the lymphatic glands?

The lymphatic glands are producers of the lymphocytes or lymph corpuscles, and also filter out and retain toxic substances carried to them by the lymph vessels.

BLOOD**What is the normal proportion of blood in the human body?**

The total quantity of blood is roughly estimated at one-twelfth the body weight.

What is the chief function of the red blood corpuscles?

The chief function of the red blood cells is to carry oxygen in the form of oxy-hæmoglobin to the tissues and organs throughout the body.

What is the action of oxygen upon the blood?

Oxygen combines with the hæmoglobin of the red cells to form the loosely organized oxy-hæmoglobin.

What is the composition of blood?

Blood consists of a clear, yellowish fluid called plasma and small, round, microscopic cells called corpuscles,—the so-called “formed elements.” The corpuscles are of two varieties, white and red. The red cells are non-nucleated, elastic, about $1/3200$ of an inch in diameter and resembling a flattened sphere. They contain hæmoglobin, a protein substance containing iron, which has a strong affinity for oxygen, and this hæmoglobin is held in a stroma of protoplasm. About 4,500,000 red cells are found in each cubic centimetre of human blood.

The white cells are nucleated, some polynucleated, and are of various sizes, the largest about $1/2500$ of an inch in diameter. They move more slowly in the plasma, are less numerous, 7500 to a cubic centimetre being the average. They have the power of amœboid movement and may change their shape. The plasma

is made up chemically of soluble proteins, a small amount of sugar and fats, and salts of sodium, potassium and calcium.

What is the function of the islands of Langerhans? What remedy, given by hypodermic, supplies the loss of this function?

The islands of Langerhans are aggregations of epithelioid cells found in the pancreas, which furnish an internal secretion to the blood. This secretion is effective in enabling the liver and muscles to store up sugar in the form of glycogen, and maintain the ratio of available sugar in the blood serum at from 80 to 120 mgm. per 100 c.c. in the fasting individual.

Insulin, given in proper dosage by hypodermic injection, supplies, at least, partial loss of this function.

What property in the blood causes it to clot and of what is the clot composed?

Clotting of blood is dependent on the liberation in the blood of a substance known as thrombin. This being formed from prothrombin in the presence of lime salts, reacts with fibrinogen to form fibrin, an insoluble protein substance which precipitates in a fine mesh work in which the blood cells are caught to form the coagulum. The serum separates as a clear, straw-colored liquid. The initial cause of the production of prothrombin is believed to be trauma to the white cells and blood platelets. Very slight injury liberates thrombokinase, an enzyme, which causes the splitting of thrombin from the prothrombin of the blood. Thrombin then acts on fibrinogen to form fibrin, the blood cells are enmeshed, and coagulation has begun.

What is the normal coagulation time? Name one preparation that is used hypodermically to produce coagulation of the blood.

The normal coagulation time is four and one-half minutes. Thromboplastin is one preparation given hypodermically to produce coagulation of the blood.

What is the chief function of the red blood cell?

The chief function of the red blood cell is in its oxygen-carrying ability.

What is the chief function of the white blood cell?

The chief function of the white blood cell is in its phagocytic power.

What is diapedesis? Explain it.

Diapedesis is the term used to explain the emergence of white blood corpuscles through the walls of the capillaries. A projection of the white cell body, called a pseudopod, inserts itself between the thin flat cells which make up the capillary wall and the rest of the cell follows by amoeboid motion.

What takes place through the walls of the capillaries?

Passage of the leucocytes from the capillaries into the tissues and the diffusion of substances dissolved in the blood pass through the capillaries into the tissues.

(a) Of what value is the clotting of blood? (b) How may this clotting prove a danger?

(a) Clotting of blood is a protective mechanism to stop hæmorrhage.

(b) Blood clotting may prove a danger when the clot is carried by the blood stream to a distant blood vessel which it occludes.

What are the principal functions of the blood?

(1) To convey food and oxygen to the tissues.

(2) To convey waste products and carbon dioxide from the tissues.

(3) To provide fluid to the body tissues and aid excretion of waste substances.

(4) To equalize body temperature.

(5) To carry internal secretions manufactured in the body.

Is coagulation of blood hindered or hastened by access of air?

Coagulation of blood is hastened by access of air.

Define hæmophiliac.

An hæmophiliac is an individual whose blood, through an inheritable peculiarity does not clot within the normal time.

ELIMINATION

What are the great eliminating channels of the body?

The skin, intestinal tract, urinary tract, and lungs are the great eliminating channels of the body.

How are the waste products of the body eliminated?

Gaseous substances are eliminated through the lungs, soluble crystalline substances largely through the kidneys and sweat glands, products decomposed by the liver cells and other substances, both soluble and insoluble, by the intestinal tract.

Name two excretory organs and tell what each excretes.

The liver is both a secreting and excreting organ, and bile is both a secretion and an excretion.

The kidney is purely an excretory organ and urine is its excretion.

What is the normal reaction of urine? How is this determined?

The normal reaction of urine is acid. The reaction is determined by moistening litmus paper with urine to be tested. Red litmus paper turns blue when the urine is alkaline; blue litmus paper turns red when the urine is acid. The color is unchanged when the urine is neutral.

Give the composition of urine.

(See "Urinalysis.")

Name four constituents of normal urine.

Urea, urates, chlorides and water are always found in normal urine.

Of what do the fæces consist?

The fæces consist of a mixture of intestinal secretions, water, coloring matter, waste products and food detritus. The coloring matter is derived from both bile and food. The characteristic odor is modified by food, but is chiefly due to sulphuretted hydrogen and skatol.

Name the chief organs concerned in removing from the body its nitrogenous matter.

The waste products of protein metabolism—urea, uric acid, its compounds, and ammonia—are the nitrogenous waste products

of the body. They are excreted chiefly by the kidneys, and, to a lesser extent, by the large intestine and the skin.

Name three excretory functions of the body.

Urination, defecation and perspiration are three excretory functions of the body.

What is the office of the kidneys?

The kidneys excrete nitrogenous and other waste products of the body, dissolved in water.

What is the difference between urinary suppression and retention?

(See "General Nursing.")

What are the functions of the skin?

The functions of the skin are:

- (1) Protective.
- (2) An organ of excretion.
- (3) An organ of the special sense of touch.
- (4) One of the means of regulating body temperature.

Name the appendages of the skin.

The appendages of the skin are:

- (1) Sebaceous and sweat glands.
- (2) The nails—modified cuticle.
- (3) The hairs—also modified cuticle.

What are the uses of perspiration?

The uses of perspiration are:

- (1) To remove waste products from the body—water, urea, etc.
- (2) To assist in cooling the body by evaporation from the skin.

(a) What is the average normal amount of perspiration secreted in twenty-four hours? (b) By what may it be increased? (c) By what decreased?

(a) One quart.

(b) Condition and temperature of atmosphere; quantity of liquid ingested; decreased action of kidneys; mental emotions; action of drugs, or disease.

(c) Fever, certain diseases and the action of drugs such as atropine.

MUSCLES

Name the two classes into which muscles are divided.

Muscles are divided according to structure and function into voluntary and involuntary. Some writers classify heart-muscle in a separate group, midway between these two main divisions.

(a) What is meant by voluntary muscles? (b) What is meant by involuntary muscles? Give examples.

(a) Voluntary muscles, sometimes called skeletal muscles, are muscles which are under control of the will. The biceps muscle which flexes the arm is an example of a voluntary muscle. All the muscles attached to the bony skeleton are of the voluntary type.

(b) Involuntary muscles are muscles which are not at all under the control of the will. They are relatively thin muscular coats found in the viscera, the veins, arteries and the larger lymphatics.

What are the functions of muscles?

Muscles are specialized to produce motion and also generate heat and electricity for the body.

What is your understanding of the relation of the muscles to the nerves?

The muscles contain an inherent property of contractility which may be excited by a proper stimulus. The spinal nerves terminating in end organs in the skeletal muscles, and the sympathetic nerves, ending in plexus, furnish the physiological stimulus to the body muscles.

What is muscular tissue?

Muscular tissue is made up of numerous muscle cells, joined together by connective tissue. These cells are so specialized that when stimulated they contract with more or less rapidity.

What are the anatomical differences between voluntary and involuntary muscle cells?

Voluntary Muscle

Long cylindrical cells, many nuclei, placed superficially, has a cell wall—endomysium, marked striations seen when stained.

Involuntary Muscle

Short spindle-shaped cells, one nucleus, placed centrally, has no endomysium, no striations seen when stained.

HEAT AND METABOLISM

How is the temperature of the body maintained?

Heat is manufactured by the activities of the body cells, particularly the muscles, and glands, such as the liver, and is influenced also by the latent heat of ingested food and drink. It is dissipated in urine, faeces, by exposure of the skin to the air and by the cooling effect of the evaporation of perspiration from the skin. The heat-regulating mechanism is found in the nervous system, which regulates both the amount of blood in the skin and the activity of the sweat glands, through reflex action. Thus, when in a heated room or after exercise, the vessels of the skin automatically flush with blood and perspiration begins, accompanied by a desire to drink cool liquids. This heat-regulating mechanism is poorly developed in the new-born. In the healthy adult it is so effectual that, no matter what the external temperature may be, the temperature of the blood remains at 100° F.

Define pyrexia. What is its cause?

Pyrexia or fever is a temperature higher than the normal temperature of the body—98.6 by mouth.

It is caused by some injury, usually the action of a toxin, to the heat-regulating mechanism of the body.

Name three factors that influence metabolism.

Three factors that influence metabolism are age, weight and internal secretions.

What is metabolism?

Metabolism is the building up and breaking down process which occurs in all living matter.

Of what is the body composed?

The body is composed of protoplasm and various inorganic proximate principles—as water, sodium chloride, potassium sulphate, magnesium phosphate and calcium chloride.

What is the process of building up the body called?

Anabolism.

What is the one product of all protein substances?

Urea.

What are the uses of the (a) proteins, (b) carbohydrates and fats, and (c) salts in the body metabolism?

(a) The proteins are used to repair waste and build up new tissue. They may also furnish energy and heat.

(b) The carbohydrates are utilized to supply most of the heat and energy.

(c) Salts are necessary to promote the various physical and chemical processes of metabolism, and especially to combine with certain waste products as sulphuric and phosphoric acids, formed in the activities of the body tissues.

NERVES AND SPECIAL SENSES

What is reflex action?

Reflex action is action occurring without the aid of the higher centres and therefore independent of the will. It results from an afferent impulse immediately followed by an efferent impulse. The contraction of the pupils of the eye when exposed to light is an example of a reflex.

What is the organ of taste?

The tongue, containing the taste buds, is the organ of taste.

Trace a nerve impulse from skin to brain and out again to muscle.

The impulse which originates in the sense organ of the skin is carried by a sensory nerve to the centre in the spinal cord. The nerve fibre now passes up in the posterior portion of the spinal cord to the medulla oblongata, through the pons and up to the cortex of the brain. In the cortex is made a synaptic connection with a motor neuron. The motor neuron carries the

impulse down through the brain to the medulla oblongata. In the medulla oblongata the motor neuron crosses over to the other side and continues down through the spinal cord, on the side opposite to which it originated in the brain. The impulse reaches the end of the motor neuron in the cord, passes into a new motor neuron which passes out of the spinal cord, and travels to the muscle where it ends in motor end plates in the muscle cells.

Give the function of the pneumogastric nerve.

The pneumogastric (vagus) nerve supplies nerves to the heart, lungs, diaphragm and stomach. The nerves to the heart carry fibres which when stimulated cause a slowing of the heart. Hence they are called depression fibres of the heart. They serve to keep the heart from beating too fast. Fibres from the pneumogastric also aid in stomach and intestinal peristalsis.

(a) Define neuron. (b) What are the functions of the nervous system?

(a) Neuron is a nerve cell with all its processes.

(b) The nervous system directs, coördinates and controls the activities of the cells of the body. The brain is, in addition to the above, the seat of thought and consciousness.

What are the functions of the cerebellum?

The cerebellum is believed to control the neuro-muscular machinery which regulates the more complicated voluntary muscular movements. It also dominates muscle tonus maintaining it during rest and increasing contractility during muscular exercise.

What is the function of the crystalline lens?

The function of the crystalline lens is to accommodate the retinal area to far, or near, objects so as to receive accurate and clear vision.

How does the eye discharge fluid?

The eye discharges its normal secretion, tears, through the tear ducts into the nasal fossa. When through grief or other emotion an excessive quantity of fluid is secreted, some of it overflows on the face.

Should the pupil of a normal eye contract or dilate under a bright light?

It should contract under a bright light.

State the function of the lachrymal glands.

The lachrymal glands secrete a bland, saline fluid which moistens and protects the conjunctiva and helps to wash away dust and foreign substances that may enter the eye.

(a) What is meant by a special sense? (b) Name the organs of special sense.

(a) A special sense is a definite sensation, as hearing, sight, etc., as distinguished from an indefinite general sensation as hunger, thirst, fatigue, etc.

(b) The organs of special sense are the nose, skin, tongue, ear and eye.

Give one function of the main divisions of the brain.

One function of the cerebrum is association.

One function of the cerebellum is equilibration.

One function of the medulla oblongata is to control respiration.

DEFINITIONS AND MISCELLANEOUS

my time) What is physiology?

Physiology is the study of the functions of the body in a state of health.

Define flexion, extension, abduction, adduction, rotation, circumduction, in relation to limbs.

Flexion means the act of bending.

Extension is a straightening, especially after flexion.

Abduction is the drawing away from the median line.

Adduction is drawing toward or beyond the median line.

Rotation is the process of turning around on an axis, like a wheel.

Circumduction is the act of swinging a limb about in such a manner that a cone is described with its apex at the joint.

In what part of the body are all sensations interpreted? What would you consider the most widely distributed sensation in the body?

All sensation or sensations are interpreted in the cerebrum.

Pain is the most widely distributed sensation in the body.

Name two membranes found in the body and state their use.

The pleura is a serous membrane which covers the lungs, lines the thoracic walls, and is reflected over the pericardium, great vessels and diaphragm. It furnishes a smooth, lubricated contact-surface to the organs which it covers.

The peritoneum is a serous membrane covering the abdominal walls, the lower surface of the diaphragm and reflected over the abdominal viscera and the pelvic floor. It serves a similar purpose to the pleura.

State the purpose of synovial membranes.

Synovial membranes are smooth membranes placed in joints for the purpose of secreting synovial fluid and furnishing a frictionless lining to the joint capsule.

How does the chemical composition of bone vary in relation to age?

In youth the organic elements preponderate.

In old age the mineral elements preponderate.

Where can an abundance of lymph nodes be located? What is lymph?

An abundance of lymph nodes may be found in the neck just behind the sterno-cleido-mastoid muscle.

Lymph is the fluid found in the lymphatic channels and vessels and also in the tissue spaces. Lymph is similar to blood plasma both chemically and physically. It is colorless, or faintly yellow. It has a salty taste, a slightly alkaline reaction, and a faint odor. It contains white cells, rarely red cells, a higher percentage of waste product than blood serum, and clots less readily and firmly than blood.

Name two kinds of membrane found in the body. To what class of tissue do they belong? Give an example of each membrane.

Two kinds of membrane found in the body are serous and mucous membranes.

Serous and mucous membranes belong to epithelial tissue.

An example of a serous membrane is the pleura; an example of a mucous membrane is the lining of the mouth.

(a) What is meant by internal secretions? (b) Mention four organs that are thought to furnish an internal secretion.

(a) Internal secretions are products of glands which are passed directly into the blood.

(b) Four organs that are thought to furnish internal secretions are thyroid, pancreas, adrenals and ovaries.

What is the physiological function of insulin?

Insulin functions in carbohydrate metabolism; it enables the liver and muscles to store glucose in the form of glycogen and maintains the blood sugar at a normal level.

(a) Where are some mucous membranes found? (b) Serous membranes? (c) Synovial membranes?

(a) Mucous membranes are found in all interior surfaces to which the air has access.

(b) Serous membranes are found lining the closed cavities of the body, as the thorax and abdomen.

(c) Synovial membranes line the interior of movable joints.

(a) What is the name of the serous membrane lining the abdomen and covering its contents? (b) Of that covering the interior of the chest and the lungs?

(a) The peritoneum.

(b) The pleura.

What are the functions of the peritoneum?

Lines abdominal cavity and secretes a fluid which prevents friction of viscera.

(a) What is a gland? (b) Name a simple gland. (c) Name a compound gland.

(a) A gland is an organ developed from epithelium for the purpose of elaborating some special substance from the blood stream, either an excretion or a secretion.

The same gland may produce both of these substances.

When a gland discharges through a duct it is called a gland of external secretion; when through direct secretion into the blood stream, of internal secretion.

Glands, according to whether they are single tubular or saccular structures, or made up of many tubules or saccules, are known as simple and compound glands.

- (b) The glands of the stomach are simple tubular glands.
- (c) The salivary glands are compound, or racemose, glands.

(a) What would you understand by a ductless gland?

(b) Name three.

(a) A ductless gland is an organ which secretes a substance but has no duct by which the substance is conveyed from it. Its product is taken up directly by the blood.

(b) Thyroid.

Ovaries.

Suprarenals.

Differentiate between anatomy and physiology.

Anatomy treats of the structure of the body and its organs.

Physiology treats of the function of the body and its organs.

What is the largest gland in the body?

The liver is the largest gland in the body.

Classify glands according to function and give example of each.

Glands are classified according to function into glands with ducts (parotid) and ductless glands (thyroid).

What is the function of the lachrymal canal?

The lachrymal canal carries tears from the eyes into the lachrymal sac which in turn empties into the nasolachrymal duct.

What is the function of the Eustachian tube?

The Eustachian tube serves to keep the air pressure in the middle ear equal to that on the outside.

Describe: (a) plexus. (b) apnoea.

(a) A network or tangle, chiefly of veins or nerves.

(b) Apnoea is the cessation of respiration which follows forced respiration.

What are the characteristics of living protoplasm?

The characteristics of living protoplasm are nutrition, growth, irritability, movement and reproduction.

What do you mean by amoeboid movement?

Amoeboid movement is the movement of the white blood cells by means of pseudopods, similar to that of the unicellular organism, the amoeba.

What is the function of the bones?

The bones in the bony skeleton primarily support the body structure, protect delicate structures, and furnish attachment to muscle insertions.

The red bone marrow supplies the body with red cells, the fatty marrow with some of the white blood cells.

(a) How is the fracture of a bone repaired? (b) Is activity important in the growth of bone? (c) Why do fractures readily occur in the aged?

(a) When a fracture occurs the blood which has escaped, tissue debris and parts of bone form a mass around the broken ends of bone. This mass becomes organized into a more firm mass. Osteoclasts or bone-eating cells appear and digest part of the dead bone at the ends of the fracture. At the same time osteoblasts or bone-forming cells from the periosteum appear in the firm mass above described, which surrounds the bone and is called callus. These osteoblasts produce calcification of the mass, which joins the ends of the bone together. As this mass becomes bone a medullary canal is developed in it to connect with the medullary canal of the two ends. After considerable time most of the excess callus is removed by more osteoclasts and the bone assumes something of its former contour.

(b) Muscular activity is most important in the growth of bone since it enhances its blood supply. Lack of it will result in the bones being soft and deformity may result.

(c) Bones fracture in the aged more readily because of the greater percentage of calcium over the organic matter, causing the bones to become brittle.

Why is it important for temporary teeth to be retained until time for the eruption of the permanent teeth?

To guide the new teeth into place and to supply a source of calcium to be absorbed in their development.

Give two uses of the vertebral column.

The vertebral column furnishes a protective covering for the delicate spinal cord and neural canal, and also a firm, yet flexible, column to support the skull and attach the ribs.

What is normal pulse rate? Respiration? Temperature?

(See "General Nursing.")

What is energy?

Energy is the capacity for performing work.

To what systems do the following belong: (a) lungs, (b) skin, (c) urinary organs, (d) intestines?

(a) The lungs belong to the respiratory system.

(b) The skin belongs to the excretory system.

(c) The urinary organs belong to the excretory system.

(d) The intestines belong to the alimentary and excretory systems.

Define (a) tissue, (b) organ.

(a) Tissues are the basal substances from which the body is built. They are made up of cells united by intercellular substance, or by anastomosing processes from the cells. The intercellular substance usually determines the nature of the tissue itself. (b) An organ is a physiological unit performing some special function and made up of two or more tissues of different type.

Name the different tissues of the body. Give example of each.

The body is made up of epithelial, connective, muscular, nervous and osseous tissues. Some authorities classify osseous structures with the connective tissues.

An example of epithelial tissue is the skin.

An example of connective tissue is cartilage.

An example of nervous tissue is the brain.

An example of osseous tissue is bone.

What is the purpose of the periosteum?

The periosteum is the nutrient membrane of bone and contains the osteogenetic cells which enable bone to reproduce itself.

What is the use of joints?

Joints in connection with muscles give motion to the body and permit of flexibility.

How many days are in the period of gestation?

There are about 280 days in the period of gestation.

Define a cell.

A cell is a minute mass of protoplasm containing one or more nuclei and exhibiting the phenomena of living tissue.

Define function.

Function is the special work of an organ or set of organs.

Define absorption, assimilation, cohesion, excretion, secretion.

Absorption is the imbibition of material, nutritious or otherwise, by a living organism.

Assimilation is the process by which nutritive material having been properly prepared by an organism becomes a part of it.

Cohesion is the physical force which holds unorganized bodies together.

Excretion is the act of secretion of a waste product intended to be passed to the exterior.

Secretion is the act of elaborating from the blood, by means of special glands, substances useful in the organism.

Define (a) elimination, (b) nutrition.

(a) Elimination is the excretion of waste materials from the system.

(b) Nutrition is the function possessed by living organisms of repairing tissue waste by absorbing and assimilating food materials, and also the state produced by exercising that function properly.

Define: leucocyte, ganglion, neurilemma, œdema, peristalsis.

A leucocyte is a white blood cell.

A ganglion is a subsidiary nerve centre capable of receiving and sending out nerve impulses.

The neurilemma is the structureless sheath which encloses each nerve fibre.

Edema is the swelling produced when the subcutaneous tissue becomes infiltrated with lymph.

Peristalsis is the worm-like contractions of the tubular organs of the body, especially of the intestines, whereby the contents of the organs are moved downward.

Define: neurotic, phlegmatic, hiccough.

Neurotic means pertaining to or dependent upon a neurosis.

Phlegmatic is the temperamental state in which an individual is more or less apathetic.

Hiccough is an interrupted inspiration in which, owing to the sudden contraction of the diaphragm, the glottis closes, producing a characteristic sound.

Define: mastication, deglutition, digestion.

Mastication is the act of grinding food by chewing it.

Deglutition is the act of swallowing food.

Digestion is the act of preparing food for absorption.

Define osmosis.

Osmosis is the mixing or tendency to mix of two liquids or two gases by passage through a membrane or porous wall separating them.

Define fermentation.

Fermentation is the chemical decomposition which takes place in an organic substance due to the action of organized or unorganized ferments.

What is positive chemotaxis? Negative chemotaxis?

Chemotaxis is a term applied to the biochemical property which certain cells and certain biochemical substances possess of attracting or repelling movable cells in their immediate proximity. When cells are attracted by other cells or cell products, the latter are said to display *positive* chemotaxis. When the cells are repelled by other cells or cell products, the latter are said to display *negative* chemotaxis.

Give an example of positive chemotaxis.

The attraction of white blood cells to an inflammatory area is believed to be due to positive chemotaxis.

Why do cold baths frequently reduce temperature in fever, while cold baths of normal persons in summer soon make the body feel warmer?

The cold baths in fever act in two ways to reduce temperature, (1) by allowing evaporation of water from the skin which cools the blood in the vessels of the skin; (2) by causing a primary contraction followed by a reflex dilatation of skin vessels in the reaction which follows the application of cold, with a resulting loss of heat.

Cold baths of normal persons in summer bring about as a sequel a reaction or "glow" of the skin, in which the warm blood from the interior of the body floods the superficial vessels. This produces a feeling of warmth in contrast to the previous cool sensation experienced in the bath—when the superficial vessels of the skin were primarily contracted by the cold.

To what is cretinism due?

Cretinism is a disease caused by the improper development and function of the thyroid gland in young children. The thyroid gland normally pours an internal secretion into the blood stream which favorably influences body metabolism. Cretins are mentally and physically inferior.

What is the active principle of the internal secretion of the thyroid gland?

The active principle of the internal secretion of the thyroid gland is a very powerful organic iodine compound which has been called thyroxin.

What is a spirometer? What are usual spirometer readings for a 150 pound man of average chest girth? For 150 pound woman of average chest girth? What is the influence of body activity on spirometer readings?

A spirometer is an instrument used to determine the maximum capacity of the lungs—called "vital capacity."

The usual reading for a 150 pound man of average chest girth is 4.1 litres. For a 150 pound woman of average chest girth 3.5 litres. Athletes have a normal reading of 0.3 litre higher while sedentary individuals have a normal reading of 0.3 litre lower than the average.

What is meant by specialization of cell function? Give four examples in different cells of the human body.

The property of specialization of function is possessed by the cells of the body as a sort of a division of labor. In lower organisms, such as the amœba, which is a single cell organism, several functions are equally combined in one cell, such as irritability and conductivity, contractility, etc., but none of these are very highly developed. In the human body, as well as in the bodies of most mammals, the cells and tissues are highly specialized.

Examples: the muscle cells for extreme contractility, the nerve cells for irritability and conductivity, the bone cells for rigidity and strength, the gland cells for secretory function.

In all these cells one particular function has been specialized or intensified to the partial or complete exclusion of some other quality—thus the power of regeneration so marked in the not highly specialized connective tissue cell is lost in the muscle cell, and when a muscle cell is destroyed connective tissue replaces it.

URINALYSIS

Name the urinary organs and give their functions.

The kidneys, two in number, excrete urine.

The ureters, two in number, convey the urine to the bladder.

The bladder collects the urine, prior to expulsion through the urethra.

The penis, in the male, contains the urethra, which in the female terminates at the vulva, and carries the urine to the external surface.

What is urine?

Urine is the fluid excreted by the kidneys.

Name the physical characteristics of normal urine.

It is a transparent, yellow, or amber fluid, having an acid reaction, a specific gravity varying from 1.010 to 1.030, a saline taste and a faint odor. These physical characteristics vary with ingestion of food or drugs, as in diseased conditions of the body.

(a) What facts with regard to urine should be reported on clinical record? (b) What are the findings for which microscopical examination of urine is made?

(a) The nurse's record should give the amount of urine voided in ounces, its color and general appearance.

(b) The microscope looks for degenerated kidney products known as casts, for blood cells and for pus or epithelial cells.

What is about the normal amount of urine voided in 24 hours?

About 1500 c.c., or 50 ounces.

What is meant by specific gravity?

The weight of a given bulk of any fluid as compared with the weight of an equal bulk of water, water being taken as the unit and both fluids being at a specific temperature (15.6° C.).

What is the normal specific gravity of urine?

The normal specific gravity of urine varies from 1.010 to 1.030. It averages 1.015.

What is a urinometer?

A urinometer is a hydrometer for measuring the specific gravity of the urine.

What important points would you observe in examining the urine chemically?

In examining urine chemically it is well to note color, degree of clearness or amount of sediment, reaction, specific gravity, presence of albumin and sugar, acetone and diacetic acid as a routine procedure.

How would you distinguish between acid and alkaline urine?

Acid urine turns blue litmus paper red.

Alkaline urine turns red litmus paper blue.

Give one test for sugar in the urine.

Fehling's test for sugar in the urine is very reliable. It depends upon the property possessed by glucose of reducing the blue, soluble, copper sulphate to the red, insoluble, copper oxide, when boiled in the presence of an alkali. To prevent decomposition, Fehling's solution is kept in two separate solutions, one of copper sulphate designated A, and the other of the alkaline salts, labeled B. Equal parts of solutions A and B are mixed in a test tube, and about four times the bulk of water added. The solution is then boiled, and a quantity of urine equal to the

original volume of undiluted solution added drop by drop, boiling after each addition. In the absence of a red precipitate the test is negative. Highly concentrated urine, containing much uric acid or urates will give a yellow, muddy, precipitate.

Give the test for glucose in the urine.

Test for glucose in urine. Pour in a test tube about 3 c.c. of Benedict's solution and mix with it about eight drops of urine, then boil the mixture for about half a minute. Glucose may appear, if present, while the tube is still on the flame or it may appear when it cools after standing on the rack for a while. The color of the reaction depends upon the quantity of glucose present in the urine. If a large quantity is present, the solution turns yellow at first but soon becomes red and the precipitate is just like red-brick dust.

The Fehling test, given above, is a reliable test for glucose or lactose, though the latter does not often occur in the urine.

Why is a diet of importance in diabetes mellitus?

Diet is of importance in diabetes mellitus, because feeding with a full diet of sugar and starchy foods causes increased excretion of sugar in the urine and loss of weight and strength.

Give two tests for albumin in the urine.

Heller's test: Filter the urine if at all turbid. Pour a small quantity of nitric acid into a test tube. Allow a fine stream of urine to trickle down the side of the test tube containing the acid until it forms a definite layer over the latter. If albumin is present a white ring will appear directly at the point of contact of the two liquids.

Heat test: More than half fill a test tube with urine and heat the upper portion to boiling, then add 7 or 8 drops of 5 per cent. acetic acid and boil again. If albumin is present, a milky layer will appear on the top of the test tube in contrast to the clear portion below. If no albumin is present, the urine remains clear as before the heating and the addition of the acetic acid. Urates or phosphates appear in some specimens after the first heating, but as soon as the acetic acid is added they dissolve instantly.

What is the test for chlorides in the urine?

Chlorides in solution can be detected by their forming a white precipitate with a solution of silver nitrate, which is insoluble in nitric acid but soluble in ammonia.

What is the appearance of urine containing bile?

It is dark yellow, deep amber, or golden brown, and when fresh and shaken vigorously has a yellow tinged foam.

Give one test for bile in urine.

Gmelin's test: Add a few drops of urine on a porcelain plate to a few drops of nitric acid. At the point of contact a play of colors is seen—green, blue, violet, red, yellow—of which the appearance of green is characteristic of bile.

What is meant by residual urine?

By residual urine is meant the urine remaining in the bladder after partially successful attempts at urination.

What disease increases the quantity of urine?

Diabetes.

What diseases influence the quantity of urine passed?

The quantity of urine is increased by nervousness, diabetes insipidus, diabetes mellitus, hysteria, chronic interstitial nephritis.

It is decreased by high fever, vomiting, diarrhoea and acute nephritis of toxic origin.

Name several causes that might increase the flow of urine.

Drinking much water or other fluid, especially in a cold atmosphere; diabetes mellitus; diabetes insipidus, nervousness or hysteria, diuretics, alcoholic drinks.

Name several causes that might diminish the flow of urine.

Restriction of fluid intake; vigorous exercise, especially in warm atmosphere; suppression of urinary secretion; retention, diarrhoea, vomiting, acute nephritis, fever, dissolution.

What is the average capacity of the average adult bladder?

About one pint.

Why is it necessary to examine urine both before and after an operation under anæsthesia?

Urine is examined before general anæsthesia in order to determine whether any nephritic or diabetic condition is present which

would make anæsthesia especially dangerous. It is examined after anæsthesia to determine whether or not the anæsthetic agent has damaged the kidneys.

Name six general symptoms of the patient which would lead to your making a very careful record regarding urine.

Pruritis, especially of the genitals, thirst and polyuria, especially if accompanied by emaciation, and cutaneous neuritis in the extremities, suggestive of diabetes. Headache, delirium, slow hard pulse and coma or coma-vigil, suggestive of uræmia occurring in Bright's disease.

When should a specimen of urine be secured?

In the morning before breakfast, unless otherwise ordered. Often it is advisable to secure it after food, if sugar is to be tested for.

Name two important causes for suppression of urine.

The overwhelming toxæmia seen in such diseases as cholera or streptococcus septicæmia, and the toxæmia produced by mineral poisons such as arsenic and mercury, may cause complete suppression of urine—first, in depleting the body of water by way of the intestine, and second, by destroying the secretory mechanism of the kidney.

What would you suspect if a 24-hour specimen of urine was excessive in quantity, pale in color and of a high specific gravity?

A urine with the foregoing characteristics would suggest diabetes mellitus.

What are the functions of the ureters?

The ureters convey urine from the kidney pelves to the bladder.

Define: nephritis, polyuria, dysuria, anuria, hæmaturia.

Nephritis is an inflammation of the kidney tissue.

Polyuria is an excess secretion of urine.

Dysuria is painful urination.

Anuria is absence of urination.

Hæmaturia is the presence of blood in the urine.

What would you expect to find in making an urinary analysis in uræmic Bright's disease?

Quantity, 24 hours, over 2000 or 2500 c.c.; reaction, acid.

Color, pale yellow. Turbidity or sediment, none.

Specific gravity, 1.002 to 1.010.

Albumin, faint trace.

Sugar, none.

Microscopic examination of sediment shows hyaline casts and a few epithelial cells.

No blood or pus.

In what disease is there a large amount of urine with a high specific gravity?

Diabetes mellitus.

What is the condition of urine in acute Bright's disease?

In acute Bright's disease the urine is not abundant in quantity, reddish-yellow in color, with a high specific gravity. It contains albumin and granular and epithelial casts and red blood cells.

Upon what essential points should a report always be made regarding urine?

The quantity voided, the physical characteristics of the urine and when a specimen was saved for examination, a note should be made of the occurrence.

Mention some causes of turbidities in urine.

Phosphates in alkaline urines, and urates in acid urines, will cause turbidity. Pus or mucus in urine is a frequent cause of turbidity.

What properties in urine would suggest the need of a urinalysis?

Excessive or much reduced quantity, cloudiness or excessive sedimentation, marked change in color or odor in freshly voided urine.

What is the accepted order as to urine with all new patients?

A specimen of urine of all new patients should be saved for examination.

In securing a specimen of urine from a female patient, when it is necessary to eliminate every possible error as to the source of albumin, how would you proceed?

The permission of the physician should be secured, and the patient catheterized with a well-lubricated catheter.

In what pathological conditions is acetone found in the urine?

Acetone is found in the urine frequently in diabetes mellitus, tuberculosis, hyperpyrexia, carcinoma and after chloroform anæsthesia.

Describe the urine of acute cystitis.

Acute cystitis: The urine is bloody or smoky in color, the specific gravity rather high, the reaction strongly acid. Albumin is present in quantity proportionate to the blood, and the abundant sediment contains epithelial pus and red blood cells.

When the Fehling test for glucose in the urine gives a doubtful reaction, what other test may be used as a check?

The fermentation test, which consists in observing the fall in specific gravity, and the formation of gas which follows yeast fermentation of the urine.

Give three reasons why urine analysis is of such importance to physicians and scientific investigators.

Three reasons why urine analysis is important are as follows:

1. The analysis is an index to the various changes occurring in the kidneys or in the genito-urinary tract.
2. The analysis gives evidence of changed body chemistry.
3. The analysis is important in showing progress of disease and in managing treatment.

HYGIENE AND BACTERIOLOGY

PERSONAL HYGIENE

What is meant by personal hygiene?

Personal hygiene is that branch of medicine which has for its object the preservation of the health of the individual by personal prophylaxis.

What general and special hygienic precautions should be observed by nurses during their training and while practicing their profession in order to preserve their own health?

The general precautions are those relating to the maintenance of the normal resistance of the body to disease by personal cleanliness, a reasonable amount of sunlight, fresh air, sleep and exercise, pure water and digestible food, and suitable clothing. The special precautions relate to the avoidance of infection by wearing suitable sterile clothing, maintaining a rigid technic to avoid infecting surrounding objects after handling infectious material, carefully sterilizing the hands after touching or handling infectious material, and by taking such special immunizing precautions as smallpox vaccination, typhoid vaccination and diphtheria toxin-anti-toxin.

Name ten traits you consider important in a nurse.

- | | |
|------------------|--------------------------|
| 1. Intelligence | 6. Kindness |
| 2. Self reliance | 7. Patience |
| 3. Neatness | 8. Strength of character |
| 4. Helpfulness | 9. Courage |
| 5. Cheerfulness | 10. Tact |

Describe how a nurse should take care of her hands. Her feet.

The nurse's hands should receive especial care. The nails should be cut and trimmed, rounded, the cuticle pushed back and hangnails attended to. The roughness and soreness of the skin due to over-vigorous scrubbing should be treated by wearing gloves

at night with a suitable hand-lotion. Sterilized glycerite of starch smeared on the hands before putting on rubber gloves also helps.

The nurse should wear sensible, well-fitting shoes, with a broad and not high heel, the arches well supported. All corns, calluses, etc., should receive prompt attention. Pain in the arches should not be temporized with; a competent orthopædic surgeon should be consulted at once and his advice and treatment followed. The feet should be bathed every night in warm water and dusted with talcum to insure comfort and cleanliness.

Name some personal conditions which have a tendency to undermine the health.

Decayed teeth and inflamed gums, resulting in pyorrhœa, enlarged tonsils and infected adenoids, chronic middle-ear disease, and sinus disease, constipation, improper habits of eating, inordinate use of alcohol or tobacco, obesity—these are some conditions which have a tendency to undermine the health.

Outline care of the teeth.

The teeth should be brushed three times daily and examined at least every six months by a competent dentist.

What are nature's best common destroyers of disease germs?

Fresh air and sunshine are nature's best common destroyers of disease germs.

Why is bathing so important to health?

Because it removes excretory matter from the skin, acts as a local stimulant to the skin and as a reflex stimulant—especially when the water is cold—to the spinal cord nerve centres.

What are the principal factors in maintaining health?

Proper food, sufficient sleep and rest, properly balanced work, recreation and exercise, hygienic environment and personal cleanliness, including proper habits and care of the excretory function.

What is rational living, and what does it include?

(See above question.)

Name the essentials conducive to a hygienic condition of the body.

(See foregoing question.)

Name several factors which may predispose to disease.

Gluttony, excess in alcoholic beverages or other stimulants, fatigue from muscular exertion or loss of sleep and exposure are several factors which may predispose to disease.

Why is rest necessary for the body? What is the best way of resting?

Rest is necessary to keep one's health and strength. When in motion energy is used up and chemical processes go on which produce fatigue substances in the body. It is necessary for us to rest to enable the body to replace tissue used up and to get rid of the chemical products of fatigue. In addition, the nervous system being constantly in use must be rested or brain fag will result. Brain fag prevents further use of the brain, or at least so impairs its function as to render accurate thinking impossible.

The best method of resting is by sleeping. If this is not possible lie down with limbs relaxed and at the same time put the mind at rest.

Give three important factors in stimulating the excretory organs of the body.

1. Regular habits in emptying bowels and bladder.
2. Taking of large amounts of water.
3. Vigorous exercise to stimulate the sweat glands of the skin.

From a health standpoint is it more or less important to have clean hands than a clean face? Why?

It is more important to have clean hands because when we eat the food does not touch the face but some of it does touch the hands.

Discuss the advantages of the care of the skin in health.

The skin as an important organ of excretion must be cared for in order that it may function at its best. Bathing cleans the skin of cell debris and dried sweat, stimulates the blood vessels and prevents infection.

Give reasons why mouth breathing is injurious.

Mouth breathing is injurious (1) because the air breathed through the mouth is not sufficiently warmed or moistened; (2) because the air inspired through the mouth is not as clean as that breathed through the nose, since the nose filters out bacteria and

158 STATE BOARD QUESTIONS AND ANSWERS

dust; (3) because an insufficient amount of oxygen is admitted to the lungs as a result of the condition that brings about mouth breathing; (4) because upper respiratory infection which may be the precursor of more severe infection of the bronchi or lungs is favored by mouth breathing; (5) improper development of the palatal arch and pharyngitis with resultant Eustachian catarrh may result from mouth breathing.

Name two causes of mouth breathing.

Mouth breathing may be caused by an obstruction in the nose, as a deflected nasal septum, or by excessive adenoid tissue in the naso-pharynx.

(a) What are the advantages of a regular physical examination? (b) What should this include?

(a) Advantages of a regular examination:

1. It may uncover a latent, beginning, or predisposition to disease.
2. It gives the patient a chance to improve his hygiene if there is any fault present.

(b) It should include:

1. Thorough examination of the heart and lungs.
2. Examination of the teeth, eyes, throat and mouth.
3. Examination of the abdomen and extremities.
4. X-ray of chest.
5. Urine analysis and possibly a kidney-function test.

What precautionary measures should a nurse use in regard to herself when nursing an infectious case?

(1) She should cover her hair and wear a sterile gown.

(2) She should wash her hands and rinse them in an antiseptic solution immediately after handling the patient or any of his contagium.

(3) She should be careful not to touch anything in the room, chairs, door-knobs, etc., when her hands are infected.

(4) She should never eat, if it can be avoided, in the same room with the patient.

(5) She should never touch her face with her hands, if avoidable, while in attendance on the patient.

(6) If an immunizing vaccination is possible, she should take it.

(7) She should have at least 6 hours' sleep and 3 hours in the open air out of every 24.

Why is it necessary to keep the mouth and teeth clean?

Name some evil effects of lack of oral hygiene.

Several results may follow neglect of mouth hygiene: first, decay of the teeth with improper mastication of food; second, infections of the gums and alveolar process resulting in auto-intoxication; third, the occurrence of many infectious diseases from bacteria that make the mouth their portal of entry. In febrile diseases lack of care may result in the collection of sordes on the teeth, tongue and lips, with bleeding and ulceration of gums and resultant infection of the middle ear via the Eustachian tubes or of the salivary or lymph glands, resulting in parotitis or localized abscesses. Reinfection in typhoid has been attributed to lack of care of the mouth.

What do you understand by "internal cleanliness" of the body?

The term applied to the condition produced when the colon and rectum are emptied by proper habits and the mouth and teeth are clean.

Why is sea bathing especially valuable?

Sea bathing is valuable for two reasons: the body is exposed to the sun and air; the salt water has a stimulating effect upon the skin.

Why is deep breathing important?

Deep breathing keeps the chest muscles and ligaments in a good state of tonus and allows full development of the lung tissue, so that the pulmonary blood is fully oxygenated at all times.

Write something about the cause, care and prevention of colds.

(a) The cause is two-fold: (1) decreased resistance by chilling, fatigue, some chronic disease, or some local inflammation in the nose or pharynx (adenoids, infected tonsils, nasal spurs, etc.) and (2) infection with one of the varieties of pneumococci, staphylococci, streptococci, influenza, more usually with one of these bacterial groups combined with others.

(b) The care should consist in rest, free purgation, bland irrigation and oils in the nose if rhinitis is present, hot baths and

easily digested, simple diet, together with such medication as is prescribed.

(c) The prevention is avoidance of the causative factors, avoidance of infected individuals and assemblages where they may gather, "hardening" the skin by taking frequent cold baths, if no contraindication for them exists, and wearing suitable clothing.

Give the preventive treatment for diabetes.

Absence from the food of excessive carbohydrates will aid in preventing diabetes in normal individuals or in those inclined to become diabetic.

How can you safeguard your health while travelling?

The traveller should not eat uncooked food, or drink unboiled milk or water.

Name a defect of the eye incident to school life.

Myopia, short-sight, occurs during school life and is believed to be induced by insufficient or improper lighting of the schoolroom.

Why are several thin coverings better than one heavy one?

Because several thin coverings will contain a larger amount of air than one heavy one, and the ability of a covering to retain the body-heat is directly dependent upon its air-containing properties.

What conditions can be partially caused by poor posture?

Curvature of the spine with displacement of the abdominal organs, round shoulders and compression of the chest may result from poor posture.

What do you understand by the hygiene of pregnancy?

By the hygiene of pregnancy is meant the special laws of personal hygiene prescribed for the conduct of the pregnant woman.

What keeps our bodies warm?

Our bodies are kept warm by reason of the heat generated in the chemical changes that take place in our body tissues, incident to their functional activities.

What are the dangers of using alcoholic beverages?

The dangers of using alcoholic beverages are that alcohol is a narcotic poison, and that a habit may be easily formed of chronic alcoholism, with diminished mental and bodily vigor as a result.

What principal hygienic directions should be given to a patient suffering from tuberculosis?

(See "Tuberculosis.")

Give an example of the influence of environment in preventing disease.

Rickets is entirely preventable by exposure of the bodies of children aged from 6 months to 3 years, to adequate sunlight throughout the year, even when the diet is not well balanced. This is well seen in the practical absence of rickets among tropical tribes who live on a restricted diet, as compared with its unusual prevalence among well fed children of the northern cities.

GENERAL HYGIENE AND PUBLIC HYGIENE**Define hygiene.**

Hygiene is that branch of medical science which treats of the prevention of disease in the individual and the community.

What is meant by public hygiene?

Public hygiene is hygiene applied to a community or state by authority, usually vested in a Health Officer or Board of Health.

(a) What is meant by wholesome environment? (b) Why is wholesome environment essential to the good health of all individuals?

(a) Wholesome environment means healthy and happy surroundings. This includes home, work and play.

(b) Wholesome environment is essential because living in a healthy way promotes good health and resistance to disease. Living in happy surroundings with proper recreation promotes happiness and contentment. Pleasant surroundings promote health and health promotes happiness making a circle of circumstances one dependent upon the other.

Define Health. Define Disease.

Health means "a normal condition of body and mind." Disease "is any departure from the state of health."

What is meant by isolation? Explain the meaning of quarantine. Name four reportable diseases.

Isolation means the segregation of the sick and carriers.

Quarantine means the detention of well persons for the incubation period of the disease.

Four reportable diseases are scarlet fever, diphtheria, epidemic meningitis and infantile paralysis.

When travelling and stopping at a tourists' camp, what conditions would you consider important to investigate?

The following would be important to investigate:

1. Water supply.
2. Food supply.
3. Plumbing and sewage.
4. Privies.

What constitutes a safe swimming pool?

A swimming pool may be classed as safe when the source of the water is pure, a constant changing of the water takes place, when bathers are required to take showers before entering pool and when suits and towels are sterilized.

What is included in household hygiene?

The hygiene of dwellings includes light, ventilation, heating, water and food supply, plumbing, drainage, and cleaning.

What do you understand by the morbidity rate? The mortality rate?

The morbidity rate means the incidence of disease. The mortality rate means the death rate.

Name three well known national organizations interested in the child hygiene movement.

- (1) The American Child Health Association.
- (2) The National Association for Public Health Nursing.
- (3) The National Tuberculosis Association.

How do hygiene and sanitation affect infant mortality?

Hygiene and sanitation decrease infant mortality.

What is meant by the term "The child hygiene movement"?

The child hygiene movement is a term used to indicate the modern campaign for the education of parents in the knowledge necessary to intelligently care for their infants and children. This campaign is also referred to as the child welfare movement.

Give a classification of children according to four (4) periods of life, as usually grouped in child hygiene work, and the duration of each period.

- (1) The prenatal period, from conception to birth.
- (2) Infancy, from birth to two years of age.
- (3) The pre-school period, from two years to six years of age.
- (4) The school period, from six years to thirteen years of age, or puberty.

What traits observable in some children of pre-school age should be corrected?

The following traits observable in some children of pre-school age should be corrected: disobedience, untruthfulness, jealousy and selfishness.

Describe how the different agencies of government function to prevent disease.

The states and the nation make and enforce laws regulating the production, handling and distribution of food. Part of this work is under the Pure Food and Drug Act and part of it is under the Department of Agriculture meat inspection service. In addition to the inspection of the meat the herds of cattle that supply meat and milk are also examined for evidence of disease harmful to man.

The state and federal public health departments make every effort to stamp out or diminish disease. They do so by their educational methods, seeing to it that patients suffering from contagious diseases are quarantined and by research work and investigation to discover new diseases and treatments. Milk and food inspection and drainage and local quarantine laws are enforced by city and state laws.

Give the approximate date for the beginning of modern hygiene and sanitation.

The latter part of the nineteenth century. Koch and Pasteur are the outstanding men of that period who accomplished so much to lay the foundation for modern hygiene.

Discuss education as a health factor.

Education brings to the mind of the people the advantages of healthy and rational living. Even the primary and secondary public schools teach by precept and example the value of personal hygiene and the need for medical advice in keeping well. Superstition, one of the stone walls in the advancement of hygiene and medical science, is eradicated or loses its power in the face of education. Also when we become educated our standards of living are raised which in turn usually means better homes and surroundings.

Discuss briefly ancient and modern medicine.

Before microscopes and the discovery of the germ theory of disease, medicine was very crude. Popular belief was that evil influences of various sorts were responsible for ills and injuries. The word *influenza* comes from the Italian and means "the influence." In evidence of this, very strange and at times loathsome concoctions were used in attempted cure, and a number of false theories, such as the humoral theory in medicine and the theory of the need of pus in wounds in surgery were taught in schools of medicine. In surgery, therefore, little attempt was made to prevent infection.

Since the work of Pasteur, Lister, Koch and many others, all this has changed. We now know that bacteria and other definite agencies produce disease. With this knowledge we have scientific background for our work. Specific drugs are known; infections have been reduced by using asepsis. Various methods have been devised in the treatment of disease by taking advantage of every bit of scientific knowledge we possess. Wonderful advancement has been made, but we still hope and work for greater things.

What is included in city sanitation?

City sanitation usually includes:

- (a) Provision of a pure water supply.
- (b) Control of food supply—inspection of meats, milk and other foods.

- (c) Collection of garbage and rubbish.
- (d) Sweeping and cleaning of streets.
- (e) Removal and disposal of sewage and drainage.
- (f) Inspection of buildings.
- (g) Provision of parks, playgrounds, etc.
- (h) Control of contagious diseases.

Outline a plan for the disposal of soiled dressings and other waste material in a small hospital.

Place in a sanitary receptacle and then burn.

What advantages and disadvantages exist in country districts?

Advantages: Pure air, diminished crowding, more abundant fresh food supply, greater economy in food and rents.

Disadvantages: Absence of sanitary measures enumerated in question on city sanitation.

Are the contagious diseases of childhood necessary?

The contagious diseases of childhood are "preventable diseases." They are not necessary, and may be prevented by strict personal and school hygiene, to prevent contact of uninfected with infected persons.

What is the legal status in some states of the public drinking cup?

The public drinking cup is very properly forbidden by law in many states.

What has been accomplished by smallpox vaccination?

Vaccination has in most cities made unknown, in epidemic form, one of the worst scourges of the past—smallpox.

Give some practical examples of the personal manner in which the records of vital statistics, such as a properly recorded birth certificate, might help an individual.

A properly registered birth certificate may be a valuable legal evidence of an individual's right to inherit property, his proper age to vote, his parentage, or evidence of citizenship.

What is a nurse's responsibility concerning matters of public health?

The nurse bears a responsibility second only to the health officer and the physician in observing and attempting to carry out the laws of public health.

Is the quarantine of contagious diseases a necessary requirement of public health?

Yes.

What are the conditions necessary to health about which a city should be responsible?

(See "City Sanitation.")

Do you consider sunlight beneficial?

Yes.

What rôle is played by sunlight as a hygienic agent?

Sunlight is a disinfectant and germicide, and stimulates the activities of the cells of the animal body.

Under what conditions is sunlight most effective?

Sunlight is most effective in high altitudes or dry climates; during the summer season in temperate climates; more in the country than in cities. It is most effective during the hours from 9:00 A. M. to 12:00 in temperate climates.

Mention some of the important things a school nurse should observe in the pupils.

1. Signs of illness, especially of contagious or infectious diseases.
2. State of nutrition.
3. Personal hygiene.
4. Suitability of clothing.

Give means of destroying flies.

Prevent the breeding of flies by proper care and removal of stable manure and by proper disposal of garbage. Larvæ may be destroyed by the use of borax. Measures for catching and destroying the fly are by means of the fly trap, fly papers, and poisoned water.

FOODS

What steps should be taken in the care of milk from the time of milking to the time of consumption?

(1) Milking should be conducted with clean hands and in clean surroundings.

(2) The milk should be received in a sterile vessel and should be immediately chilled, to discourage bacterial growth.

(3) It should be bottled into sterile containers of suitable size and kept on ice until delivered to the consumer, no original package being opened after sealing.

(4) It should be, immediately on arrival at the home of the consumer, placed in the coolest chamber of the refrigerator and kept in its original container until used.

How should milk utensils be cleaned?

Milk utensils should be thoroughly washed with soap or alkaline solution and then rinsed and sterilized with boiling water.

What is the difference between pasteurizing and sterilizing milk?

Sterilized milk is raised to a temperature of 212° F. and maintained at that temperature for an hour.

Pasteurized milk is raised to a temperature of 140° F. to 160° F., and kept there for 20 to 30 minutes.

How could you make an ice-box at very little expense for use in a poor home?

An ice-box which will serve to keep the baby's feedings cold for 24 hours, can be made at home for very small cost, as follows: Procure a wooden box about 18 inches square the same depth; put a layer of sawdust 3 inches thick in the bottom of the box; fill in with sawdust around a 10-quart tin pail or a section of 10-inch galvanized pipe which occupies the middle of the box. Inside this pail or pipe place another slightly smaller pail, which is to hold the ice and the bottles. This inner pail should be covered, and the outer box tightly closed by a wooden cover lined with several thicknesses of newspaper. The inner pail should be taken out each morning to be emptied and cleaned. This little device will keep cool with 5 cents' worth of ice for 24 hours or even longer. When feeding time comes, the box is opened, one bottle is taken out, and the box is quickly closed again.

How may disease germs find their way into milk?

Disease germs may find their way into milk when the milk is handled by persons with infected hands, or when it is exposed to dust, or when it is placed in containers which have been contaminated.

Give proper care of milk in the household.

Milk should be placed in the ice-box as soon as it is received at a temperature not above 45 degrees F. It should be kept when possible in its original bottle, properly covered, and should not be left in open pitchers or bottles.

Why should impure milk not be sold?

Impure milk should not be sold because it may contain pathogenic germs in large numbers.

Why is milk of marked significance from a public health point of view?

It is almost universally used, especially for children and the sick. Milk may be so easily contaminated by pathogenic organisms that utmost care must be taken in its production and distribution to keep it free from disease-producing bacteria.

Name two diseases caused by infected (a) water; (b) milk; (c) flies.

Amœbic dysentery and cholera are water-borne diseases.

Typhoid fever and scarlet fever are milk-borne diseases.

Flies may disseminate typhoid fever and cholera.

How should food, milk and water be protected from infection?

By not allowing persons who have been in contact with infections to handle or come in contact with food or water intended for other persons, and by keeping the food and water free from flies and from exposure to dust.

What are ptomaines?

Ptomaines are substances which chemically resemble alkaloids, and which may be formed when protein substances are acted on by certain bacteria. Some ptomaines, but not all, are poisonous.

What care should refrigerators receive?

They should be thoroughly washed out and aired daily and the water drainage pipes inspected to see that they remain open, and cleaned with soda solution every week.

What care should be taken of the garbage can?

It should be covered and should be emptied each day, and it should be frequently cleaned with plenty of water. A garden hose is useful for this purpose.

What is the most sanitary method of disposing of city garbage?

Burning.

Mention a common lack of cleanliness which may result in the infection of food.

Lack of care or neglect of cleaning the refrigerator may result in the infection of food.

Mention some healthful ways in which food may be preserved for future use.

Foods may be prepared for future use without detriment to their healthful quality:

(1) By drying—as in the case of fruits and certain salted meats and fish.

(2) By the exclusion of air, by immersion in oil, by smoking, etc., and by canning.

(3) By freezing or cold storage, which is healthful when proper technic is employed.

(4) Salting.

(5) Pickling.

What is meant by food adulteration?

Food is adulterated:

(1) If a substance or substances is mixed with it so as to depreciate or affect injuriously its quality, strength or purity.

(2) If inferior or cheaper substances have been substituted for it, wholly or in part.

(3) If any valuable or necessary constituent has been omitted or abstracted from it.

(4) If it is an imitation of another article.

(5) If it consists wholly or in part of a diseased, decomposed, putrid, infected, tainted or rotten animal or vegetable substance or

article, or in the case of milk, if it is the product of a diseased animal.

(6) If it is colored, coated, polished or powdered, whereby damage or inferiority is concealed, or if it is made to appear of greater value than it really is.

(7) If it contains any added substances or ingredients that are poisonous or injurious to health.

An exception is made in the laws of most states in favor of mixtures or compounds recognized as ordinary articles or ingredients of articles of food, provided that each package offered for sale contain the name and address of the manufacturer and be plainly labeled so as to show that it is a compound.

What measures have been taken to prevent food adulteration?

Nearly every state has a pure-food law and there is also a national pure-food law, with a corps of food inspectors and appropriate penalties for infractions.

(a) What parasites may be found in meats? (b) How is the community protected against this danger? (c) Name four insects that are a menace to health.

(a) The two principal parasites found in meat are trichina and tapeworm.

(b) The federal government requires a strict meat inspection with the rejection of infested meats.

(c) Flies. Fleas. Mosquitoes. Body lice.

Name two kinds of pure water.

Two kinds of pure water are distilled and rainwater.

Give common sources of contamination of drinking water.

Well and river water are most commonly contaminated with dead organic matter and living organisms derived from surface washings, the discharge of sewage, and vegetable growths.

Name the diseases borne by water.

The three infectious diseases which may be said positively to be carried by water are cholera, dysentery and typhoid fever.

(a) How is drinking water most readily polluted? (b) How should suspicious drinking water be treated?

(a) Drinking water is most readily polluted by sewage containing the excreta of animals and men.

(b) Suspicious drinking water should always be boiled for two or three minutes.

How can stream-pollution be prevented?

Cities should prevent access of direct pollution for at least 50 to 100 miles above the water intake, and by requiring sewage disposal works for all towns and settlements.

VENTILATION AND HEATING

What is ventilation?

Ventilation is the process by which impure air is discharged from buildings and rooms and replaced by pure air.

Describe two systems of ventilation.

Two well-known systems of artificial ventilation are:

(1) The propulsion or plenum system, in which the outside air is drawn into a box and distributed through conduits to the building.

(2) The vacuum, or extractive, system, in which the air is withdrawn from the rooms through conduits and expelled. Propeller fans driven by steam or electricity furnish the power.

Which is the more dangerous to health; (a) The excess of carbon dioxide produced in the air of a room by human rebreathing; or (b) the amount of heat and water vapor in that same room?

The amount of carbon dioxide in the air produced by poor ventilation is less depressing to the organism than the usual accumulation of watery vapor and the higher temperature of a poorly ventilated room. Such a condition ultimately prevents the adequate loss of heat and watery vapor by the human body, and is especially depressing to the fever patient.

How would you ventilate a sick room where artificial ventilation was absent?

By lowering one or more windows from the top 3 to 6 inches, so that a current of cool air would spread across the ceiling and

by its greater weight sink to the lower levels and displace the warm air.

What is the composition of pure air?

The average composition of normal air is as follows:

Oxygen, 21 per cent.

Nitrogen and argon, 78.7 per cent.

Carbon dioxide, 0.03 per cent.

Aqueous vapor varying with temperature and climatic conditions, a trace of ammonia, of ozone, and of organic matter.

How many cubic feet of air are required for every child in a pediatric ward?

1000 cubic feet of air should be allowed each infant in a well-ventilated ward. Children over two years of age may thrive in wards allowing 800 cubic feet of air.

Describe one method of obtaining slight continuous ventilation in winter in a room that has not been provided with ventilation.

Ventilation of a room in winter time may be obtained by drawing down the upper window sash an inch or two and pushing up the lower sash the same distance. If there are two windows, opposite or at right angles, the ventilation will be more effective. When the windows do not have double sashes a narrow board the width of the sash may be placed under the lower window, so that the upper edge of the latter will be raised a few inches over the lower edge of the upper sash. The air, entering between the two sashes, will be directed upward, toward the ceiling.

Is night air dangerous? Why was this view formerly held?

Night air is not dangerous, as it does not differ in its important constituents from day air. The connection of soil conditions with disease has long been known, and it was believed that miasms, or vapors, arose from the ground at night and caused disease.

What is the amount of air required hourly in order for each person to maintain a fair degree of health?

The amount of air required for each person is from 30 to 50 cubic feet per minute; less than 30 cubic feet per minute will

cause ill health. Three thousand cubic feet per hour is required for each person in a confined space, to dilute the impure products of his own respirations sufficiently.

How many cubic feet of sleeping room air-space is the minimum requirement for each individual?

The sleeping room should contain at least 1000 feet of air space, with facilities for changing the air three times in each hour.

What are the characteristics of expired air and its effects?

Expired air contains mainly about 16 per cent. of oxygen, about 4 per cent. of carbon dioxide, with a large amount of watery vapor and organic matter, and is much warmer than inspired air.

Rebreathing of expired air is mainly injurious through the increased temperature and amount of watery vapor it contains, and produces fatigue, lassitude, decreased metabolism, and predisposition to disease.

What are the advantages of fireplaces?

Fireplaces properly placed are aids to the ventilation of rooms.

Why is a room lighted by electricity more healthful than one lighted by gas?

Because electricity does not burn up the oxygen in the air of the room and add impurities to it as gas does.

What is a good way to judge if the air of a sick room is fresh?

Leave the room for a few minutes for the fresh air, and when you return see if the air in the sick room has an unpleasant odor.

What are the healthiest methods of heating houses?

Heating by steam, vapor, and hot water are the healthiest methods.

At what temperature should a sick room be kept?

A sick room should be kept at a temperature of 70°, unless otherwise ordered.

What are the beneficial effects of sunlight?

Sunlight acts beneficially upon the body metabolism, stimulating it and assisting in the oxygenation of the blood. It is a germicide and disinfectant, kills moulds and bacteria, hence is necessary in all places where man or animals dwell.

PLUMBING AND DRAINAGE

To what is much of the clogging of pipes and kitchen sinks due? How is it prevented?

Pipes of kitchen sinks are most frequently plugged with accumulations of grease and food débris. This may be prevented by flushing the pipes out once a week with a hot solution of lye.

Will sewer gas cause disease?

Sewer gas is a misnomer for vitiated air found in sewers. It does not cause any specific disease of itself, but is injurious in the same manner that any impure air is injurious.

How may a privy in a city or country be kept from being a menace?

A water-tight receptacle or pail may be used in which the fecal matter is kept covered with dirt or ashes, regularly emptied and contents buried.

Why is the open privy a menace to a community?

Because it contaminates the surrounding soil and may pollute nearby wells and water courses, is usually near the dwelling, attracts flies and other insects, and vitiates the air with foul odors.

How should sinks, wash-basins, bath-tubs, toilets, etc., be kept clean?

They should be washed with a weak solution of washing soda or ammonia and polished with some non-gritty soap or soap-powder.

BACTERIA

What is a microscope and for what is it used?

A microscope is an instrument which renders visible by means of lenses objects not ordinarily visible to the naked eye. It is used in bacteriology to help in the study and identification of bacteria.

What bacteria cause: Pneumonia? Tuberculosis? Acute Meningitis? Anthrax? Typhoid? Syphilis? Erysipelas? Tonsillitis? Gonorrhœa?

Pneumonia, lobar type, is caused by a pneumococcus.

Tuberculosis is caused by the bacillus tuberculosis.

Meningitis, cerebro-spinal type, is caused by the diplococcus intracellularis meningitidis.

Anthrax is caused by the bacillus anthracis.

Typhoid is caused by the bacillus typhosus.

Syphilis is caused by an animal parasite, the treponema pallidum, originally called the spirochæta pallida.

Erysipelas is caused by the streptococcus erysipelatis.

Tonsillitis is caused by various bacteria—pneumococci and streptococci, usually.

Gonorrhœa is caused by the gonococcus.

How are bacteria treated so they may be seen under the microscope?

Bacteria are either dried in a thin film and fixed on a slide and then stained, or else suspended in "hanging drop preparation" in order to be seen under the microscope.

With what group of diseases do we know positively that bacteria are associated?

With the soil-, water- and food-borne diseases.

Define the meaning of the term bacteriology.

Bacteriology is the science which deals with the life-history of the micro-organisms known as bacteria.

Name a laboratory stain and give technic of staining a smear for the differential diagnosis of bacteria.

Gram's stain is a freshly made solution of gentian violet in aniline water with which the smear on a glass slide is stained for five minutes. The excess stain is poured off and the smear is then covered with Gram's iodine solution, which is allowed to remain on for three minutes. It is then decolorized by washing with 97 per cent. alcohol until no more stain can be washed out, and is then washed in water. It is usually counter-stained with a water-soluble contrast stain—frequently Bismark brown. Gram positive

bacteria, as staphylococci, streptococci, pneumococci, diphtheria, tuberculosis, and several others, retain the stain of the gentian violet. Gram negative bacteria, as the gonococcus, meningococcus, bacillus of dysentery, typhoid, paratyphoid, influenza, and others are stained by the counter-stain and do not take the violet color.

What is Wright's stain and what is its use?

Wright's stain is a solution in methyl alcohol of eosinates of methylene azure, methylene violet, and methylene blue. It is used with a special technic to stain smears of human blood, in order to distinguish by selective staining the formed elements of the blood.

What colors do human blood cells assume when properly stained with Wright's stain?

When stained by Wright's stain, employing proper technic, a thinly spread slide of human blood will show elements and cells stained the following colors; red cells, orange to pink; in nuclei of leucocytes, various shades of violet; cytoplasm, blue; chromatin, metallic red to pink; eosinophilic granules, red; neutrophilic granules, yellow or lilac; blood plates, purplish.

(a) What are bacteria? (b) Name and describe the three important groups into which they are divided according to shape, naming two belonging to each group.

(a) Bacteria are the lowest and smallest form of vegetable micro-organisms.

(b) The round or oval bacteria are called cocci—Staphylococcus and pneumococcus.

The rod-shaped bacteria are called bacilli—Typhoid and tubercle.

The spiral-shaped bacteria are called spirilla—Treponema pallidum and Vincent's spirilla.

To what kingdom do the bacteria belong?

Bacteria belong to the vegetable kingdom.

What conditions are most favorable to the cultivation of bacteria?

Absence of direct sunlight, moderate heat, and organic material, with abundant moisture, favor bacterial growth.

Define spore.

A spore is a very resistant, non-vegetative form which certain bacteria assume when conditions unfavorable to their growth develop.

Define pyogenic bacteria.

Pyogenic bacteria are pathogenic bacteria which by their life cycle produce pus in animal tissue.

Name five methods of studying bacteria.

Five methods of studying bacteria are according to morphology, staining properties, cultural characteristics, toxic products and pathogenicity.

What are flagella?

The flagella are long filaments which function in bacterial motility.

With what rapidity are bacteria produced?

Bacteria divide rapidly; a single germ may divide in twenty or thirty minutes; at such a rate in twelve hours a single organism could give rise to millions of bacteria.

What are protozoa?

Protozoa are the lowest division of animal life, consisting of single-cell organisms.

What are toxins?

Toxins are poisonous substances produced during the life cycle of certain bacteria.

In what two ways are bacteria reproduced?

By direct and indirect division.

What conditions influence the growth of bacteria?

The growth of bacteria is influenced by the nature of the culture medium, the amount of sunlight, temperature and moisture, and presence or absence of bactericidal substances.

Where are bacteria found?

Bacteria are found almost everywhere in nature. They are present in the air, decreasing in high altitudes; in the skin and in

all the body orifices, especially in the hair and under the nails; in the soil to the depth of 4 to 5 feet; in water, especially stagnant water; on all foods and vegetation. Bacteria are found wherever there is organic matter at moderate temperature with moisture.

What is the name given to disease-producing bacteria?

Pathogenic bacteria.

What name is given to bacteria which do not produce disease?

Non-pathogenic bacteria.

How are bacteria distinguished from one another in the laboratory?

By peculiarities of growth in various culture media, and by peculiarities of staining when fixed and mounted for microscopic examination.

Why is a working knowledge of the principles of bacteriology necessary in the education of the trained nurse?

Because the science of preventive medicine and our knowledge of infectious disease is based upon discoveries in bacteriology, and intelligent aseptic surgical technic is dependent upon it.

What are bacteriolysins?

Bacteriolysins are substances found or produced in healthy blood which have a destructive action on pathogenic bacteria.

In what branch of her work is a nurse's relation to bacteriology most emphasized?

In surgical nursing and aseptic operating-room technic.

Why is ordinary cleanliness not sufficient for the operating room or the handling of specimens for bacterial examination?

In the operating room sterile conditions must be maintained in order that there may be no chance for an infection to occur. Ordinary cleanliness does not destroy bacteria.

Sterile methods must be used in handling specimens for bacterial examination in order that no contaminating organisms may have access to the specimen.

Describe the organism causing tuberculosis.

The tubercle bacillus is a small, rod-shaped, gram-positive, non-motile organism which grows upon a special medium, is non-resistant to sunlight and is pathogenic to man and to susceptible animals.

Name three means by which germs may be destroyed.

Germs may be destroyed by heat, sunshine or chemical disinfectants.

(a) Name three conditions favorable to the growth of pathogenic bacteria. (b) Is oxygen invariably required?

(a) Warmth, the presence of organic matter, and absence of direct sunlight favor bacterial growth.

(b) Oxygen is not invariably required. Some bacteria develop only in the presence of oxygen (aërobic), some only in the absence of oxygen (anaërobic), and some under either condition (facultative aërobic or anaërobic bacteria).

Define: pathogenic, pyogenic, saprophytic.

Pathogenic, capable of producing disease.

Pyogenic, capable of producing pus.

Saprophytic, capable of living in dead matter.

Define: saprophyte, antibodies.

Saprophyte—a bacterium deriving its sustenance from dead organic matter.

Antibodies—the characteristic protective constituents of the blood and fluids of immune animals.

Explain the terms: fission, parasite.

Fission is the property possessed by bacteria of reproducing by a process of simple division.

A parasite is an organism that lives on or in another organism known as a "host."

Name three animal parasites and the diseases produced by them.

The *ascaris lumbricoides*, or the round worm, produces ascariasis.

The *entamoeba histolytica*, the intestinal amoeba, produces amoebic dysentery.

The *trichina spiralis*, produces trichiniasis.

What is a mold? What is a yeast? What is a fungus?

(a) Molds or hyphomycetes are minute plants that multiply by sporulation. They grow in the form of a network from which filaments project bearing spores.

(b) Yeasts, or saccharomycetes, are minute plants which multiply by the protrusion of buds to form a parent cell.

(c) Fungi are cryptogamous plants not containing chlorophyll, such as the puff-ball, mushroom, etc.

Name two skin diseases that are caused by mold.

Ringworm and favus.

What bearing have spores on sterilization?

Spores are much more resistant to heat and chemical disinfectants than bacteria and are therefore more difficult to destroy.

What is the use of solid culture media?

Solid media are useful to determine the shape and appearance of bacterial colonies and also to provide a medium for the growth of anaërobic bacteria.

Define (a) aërobic; (b) toxic.

(a) Aërobic is a term applied to bacteria which require air for their growth.

(b) Toxic means poisonous, as "a toxic dose," or less correctly the condition of being poisoned as "a toxic condition."

What special precaution must be taken when taking specimens or cultures for examination for bacteria?

Specimens or cultures must be taken and preserved under strict aseptic precautions, otherwise the bacterial flora will be contaminated.

What form of bacteria are found almost constantly on the skin and its deep layers, and what undesirable results follow their presence after surgical operations?

The staphylococci are found almost constantly in the skin, especially in the deep layers and orifices of the sweat glands. After

surgical infections they may form stitch-abscesses or circumscribed infections.

What type of bacteria cause the majority of acute abscesses, boils, felons, etc.?

The staphylococci produce the foregoing mentioned conditions.

Name two men who primarily gave to the world the idea of what is commonly called the germ theory of disease.

Pasteur, who discovered bacteria, and Koch who discovered the tuberculosis bacillus and formulated the laws for recognizing the absolute cause of a disease, are the two greatest names connected with the development of the study of germ disease.

Who was Lister?

(See "Surgical Nursing.")

What is the action of the following on bacteria: (a) cold, (b) warmth, (c) moisture, (d) sunlight, (e) extreme heat?

(a) The action of cold is to retard growth of bacteria.

(b) The action of warmth is to promote growth of bacteria.

(c) The action of moisture is to promote growth of bacteria.

(d) The action of sunlight is to destroy bacteria.

(e) The action of extreme heat is to destroy bacteria.

What are the soluble poisonous products of bacterial growth called?

The soluble poisonous products of bacterial growth are called toxins, or exo-toxins.

What good work is done by bacteria?

Putrefactive and fermentative bacteria break up dead organic matter into simpler substances capable of being again assimilated by plants to form the sugars, starches, and proteins necessary to man and other animals as food. Their rôle in this connection is so important that vegetable life would disappear from the earth if their activities were stopped.

How may germs be cultivated outside the body?

Germs are usually cultivated by inoculating sterile tubes or dishes of culture media—broth, agar or gelatin, are commonly used media—with small colonies of the germs which it is desired

to cultivate. These are then incubated at a proper temperature for a certain period, usually about 24 hours.

What do you mean by the term motile, as applied to bacteria?

Motile bacteria are bacteria capable of motion.

What causes decomposition?

Putrefactive bacteria cause decomposition.

What is your idea of the difference between a saprophyte and a parasite?

A parasite is an organism which subsists on a living host. Saprophytic bacteria are not parasitic, as they subsist on dead tissue, but pathogenic bacteria are parasitic. The term "animal parasite" is usually applied to the more complex animal organisms, as distinguished from the bacterial parasites, which are vegetable.

What becomes of bacteria which cause disease after leaving the human body?

Bacteria, after leaving the body, if not destroyed by disinfectants, pass into water, into the soil, or are carried about unchanged, or in spore formation, in dust. A large number exposed to direct sunshine are destroyed. Those passing into flowing streams exposed to sunshine are also soon lost, and many are destroyed by antagonistic bacteria.

What disease is caused by the bacillus of Koch?

Pulmonary tuberculosis is caused by the bacillus of Koch.

What is caused by (a) the diplococcus of Neisser; (b) the diplococcus of Weischelbaum; (c) the Klebs-Löffler bacillus?

Gonorrhœa is caused by the diplococcus of Neisser.

Cerebro-spinal fever or epidemic meningitis is caused by the diplococcus of Weischelbaum.

Diphtheria is caused by the Klebs-Loeffler bacillus.

What disease is caused by the bacillus of Eberth?

Typhoid fever is caused by the bacillus of Eberth.

How do the causative organisms escape from the body in the following diseases: (a) scarlet fever; (b) measles; (c) cholera; (d) typhoid fever?

(a-b) The contagium in scarlet fever and measles is conveyed chiefly through the nose and throat secretions. The skin scales of scarlet fever are also believed to contain infectious material, but the branny desquamation in measles has been recently shown to be free from infection (Goldberger and Anderson).

(c-d) All the body excretions in typhoid fever and cholera, especially the stools and urine, contain the typhoid and cholera bacilli.

At what temperature do pathogenic bacteria grow best?

Pathogenic bacteria grow best at about a temperature of 100° F.

What is a culture medium and name one of the most common?

A culture medium is substance prepared especially to favor the growth of bacteria. One of the most common is bouillon.

What membrane of the body is attacked by the Klebs-Löffler bacillus?

The mucous membrane is attacked by the Klebs-Löffler bacillus.

For what are the following commonly examined: (a) blood, (b) sputum, (c) vomitus, (d) urine, (e) fœces, (f) spinal fluid, (g) vaginal smears, (h) throat cultures?

(a) Blood is commonly examined for malarial parasites.

(b) Sputum is commonly examined for tubercle bacilli.

(c) Vomitus is commonly examined for presence of acid.

(d) Urine is commonly examined for albumin.

(e) Fœces is commonly examined for ova and parasites.

(f) Spinal fluid is commonly examined for meningococcus.

(g) Vaginal smears are commonly examined for gonococcus.

(h) Throat cultures are commonly examined for diphtheria bacilli.

Name five diseases which may be carried by droplet infection.

1. Tuberculosis.

2. Influenza.

3. Pneumonia.
4. Scarlet Fever.
5. Pertussis.

What is a blood culture? How is it obtained? What is its significance?

A blood culture is a culture of blood in a proper medium, obtained without outside contamination from a vein, and made with the purpose of obtaining a bacterial growth. In obtaining a blood culture the veins of an extremity are made to stand out by applying a rubber tube tourniquet rather lightly. A sterile syringe with an attached needle of proper calibre (about 22) is prepared, and the region of the vein to be punctured is sterilized by washing the skin with alcohol and painting with tincture of iodine or 2 per cent. solution of soluble mercurochrome. Usually the median vein is chosen. The needle is inserted into the vein, without transfixing it, and gentle withdrawal of the piston of the syringe will produce the required quantity of blood. The blood culture if positive will not only reveal the presence of bacteria in the blood—a bacteremia, but will enable the bacteriologist to identify the nature and type of the organism which is present.

Are all bacteria harmful?

No, the larger number of bacteria do not produce disease.

Translate “staphylococcus pyogenes aureus.” Where is it often found?

“Staphylococcus pyogenes aureus” means the golden-yellow, round bacterium, grouped like a bunch of grapes, that produces pus. It is often found in abscesses.

What is the difference between ordinary cleanliness and surgical cleanliness?

Surgical cleanliness implies freedom of the cleaned surface from bacteria.

What is meant by a “positive culture”?

A “positive culture” means that the pathogenic organism looked for has been found in the culture medium, after inoculation with suspected material.

Mention two important diseases where a bacterial diagnosis is considered essential.

A bacterial diagnosis is considered essential in epidemic meningitis and in diphtheria.

Of the two bacterial infections, streptococcus and staphylococcus, which is usually considered the more serious?

Streptococcus infection is considered the more serious.

What is meant by droplet infection?

Droplet infection, in which the bacteria are thrown out in coughing and sneezing, is a special form of contact infection, as the organisms pass directly from one person to another. When a person coughs or sneezes "into the open" bacteria are thrown into the air for two or three feet in droplets of saliva and mucus.

INFECTION AND TRANSMISSION

How must disease organisms enter the body to cause disease in a common class of infectious diseases?

In the so-called milk-, food-, or water-borne diseases, the organisms enter the body by way of the alimentary tract.

In the so-called air-borne diseases, or those occurring by direct contact, the organisms enter the body by way of the respiratory tract, in many cases lodging in the naso-pharynx or tonsil.

What body fluids are examined to find the causative organisms in the following diseases: (a) cerebro-spinal meningitis; (b) diphtheria; (c) tuberculosis; (d) gonorrhœa?

(a) In cerebro-spinal meningitis the meningococcus is found in the spinal fluid.

(b) In diphtheria the diphtheria bacillus is found in the throat secretions.

(c) In tuberculosis the tubercle bacillus is found in the bronchial secretion.

(d) In gonorrhœa the gonococcus is found in the purulent secretion of the affected part.

How are infectious diseases acquired?

(See "General Nursing; Contagious Diseases.")

(a) Give the normal leucocyte count. (b) What is meant by a differential leucocyte count?

(a) 5,000-10,000 cells per cubic millimetre.

(b) Differential count is the estimation of the percentage of the various types of white cells seen in the blood after staining with a stain such as Wright's.

In what conditions does one find an increase in the leucocytes? Give the functions of the leucocyte in an infectious disease.

A slight increase of leucocytes is found after ingestion of food; a rather marked increase in all acute infectious diseases, inflammations and wounds.

The leucocytes ingest and destroy invading bacteria and assist in overcoming infection.

Name the so-called air-borne diseases.

The "air-borne" diseases are the eruptive diseases such as measles, scarlet fever, smallpox, erysipelas, chicken-pox; also diphtheria, tuberculosis and mumps.

Define the term carrier as applied to contagious and infectious diseases, and name two diseases where carriers play an important part.

A carrier is a healthy individual, himself immune to an infection, who harbors virulent bacteria which may cause the disease in active form in others. Examples of diseases frequently disseminated by healthy carriers are diphtheria and typhoid fever.

How are disease germs carried from one person to another?

By direct contact, as when the contagium is on the clothing or hands, or in the mouth or throat, or elsewhere on the person of one individual who is brought into immediate personal contact with another. Or by the deposit of infectious material, sputum, etc., in a room where it may dry and be carried in the dust to another individual indirectly; or when the infection is carried on the clothes or person of a second individual who is not infected, to a third individual—indirect contact.

Describe an ideal sick room.

(See "Medical Nursing.")

At what period in the progress of an attack of measles does the greatest danger exist of transmitting the disease?

Just before and during the early stages of the eruption is the most infectious period in measles.

(a) What precautions are necessary to prevent the spread of diphtheria? (b) Where does the infection lurk?

(a) To prevent the spread of diphtheria:

1. Isolate the patient and his nurse.
2. Sterilize everything coming in contact with him.
3. Scrub and sterilize the hands after handling patient.
4. Use diphtheria antitoxin in prophylactic doses for exposed persons.

(b) The infection lurks in the nasal and pharyngeal secretions.

How is the micro-organism of infantile paralysis transmitted?

Infantile paralysis is believed to be carried by direct or indirect contact from the contagium in the mouth and nasal secretions and stools of infected individuals. For a while it was believed to be transmitted through the bite of the stable-fly, but investigation by Flexner and others has failed to establish this hypothesis.

What is meant by "filterable virus"?

Filterable virus is the term used to describe any fluid which is capable of producing disease in an animal or human body after it has been passed through a standard porcelain bacterial filter. A standard porcelain bacterial filter is one which has been shown to be capable of preventing the passage through its pores of the smallest microscopically visible micro-organisms.

Name the point of entrance into the body of the germ in each of the following diseases: (a) tuberculosis, (b) syphilis, (c) diphtheria, (d) malaria, (e) local abscess.

The point of entrance into the body of germ in:

- (a) Tuberculosis is the upper respiratory tract.
- (b) Syphilis is the genitalia.
- (c) Diphtheria is tonsils or pharynx.
- (d) Malaria is exposed surface of body through mosquito bite.
- (e) Local abscess is through broken skin.

What are the chief ways in which bacteria are carried around a hospital ward. Give three rules for nurses as a means of preventing the spread of disease.

The chief ways in which bacteria are carried around a hospital ward are by excretions of the patient and by dust.

Three rules for nurses as a means of preventing the spread of disease are:

1. Absolute cleanliness.
2. Thorough disinfection of all excreta.
3. Isolation of the patient.

What causes malaria fever?

The cause of malaria fever is one or more of the three forms of the malaria plasmodium.

Name a disease which may be produced by a filterable virus.

Acute anterior poliomyelitis, or infantile paralysis, has been produced experimentally in animals by means of a filterable virus obtained from infected animals.

What diseases may be caused by flies and how may they be transmitted?

Typhoid fever, infectious diarrhœa, dysentery, and cholera may be caused by flies carrying infectious material on their feet and bodies, from fæces and other excreta, to milk or other food.

Scarlet fever and diphtheria may also be spread in this way. Septic infections may be caused by infected flies alighting on a wound.

Give the reasons for the crusade against the house-fly.

House-flies feed on infectious and decomposed material, and have been found to carry on their feet many varieties of pathogenic germs with which they infect food, milk, etc.

How is the bubonic plague spread from city to city and from country to country?

Bubonic plague is spread from country to country through the medium of fleas which infect the rats which are found on most ships. On land the disease is carried both by rats and ground squirrels.

What is hookworm disease? How is it spread?

Hookworm disease is a disease caused by an intestinal parasite, the "hookworm," or the *anchylostoma duodenalis*. This little parasite lives in the duodenum and small intestine, attaches itself to the mucous membrane by its "hooks" and causes a severe grade of anæmia, abdominal distention, emaciation and mental hebetude, both by the blood it abstracts as well as by a specific toxin secreted in the passage of the larvæ from the skin to the intestine. The larvæ are found in infected water and attack the skin of those exposed.

The eggs are found in the fæces of infected persons.

How is tetanus acquired? What is its cause? What is the prophylactic treatment?

Tetanus is acquired by punctured wounds or from wounds contaminated with soil. The cause of tetanus is the tetanus bacillus. The prophylactic treatment consists in the subcutaneous injection of 1500 units of tetanus antitoxin.

Upon what theory is tetanus antitoxin administered?

Tetanus antitoxin is administered upon the theory that antitoxin neutralizes toxin.

What is psittacosis?

(See "Medical Nursing.")

Name two diseases spread exclusively by insects and give the name of the latter.

Malaria is conveyed by the bite of an infected mosquito.

Yellow fever is caused by the bite of an infected mosquito.

Where do flies mostly breed?

Flies breed in manure, human excrement and other decayed animal and vegetable matter.

Explain the important difference between the way typhoid fever is spread by the house-fly and malaria by the mosquito.

The mosquito in biting a person injects the malaria parasite directly into the blood stream, while the house-fly spreads the typhoid germs on the food, which carries the germs into the system by way of the alimentary tract.

Why are mosquitoes a menace to health?

Because infected mosquitoes cause malaria.

Why is screening important in communities where malaria or yellow fever exists?

Because these diseases are spread by mosquitoes.

Name three diseases caused by intestinal parasites.

Amoebic dysentery, hookworm disease, tapeworm disease.

What is the percentage of preventable constitutional diseases?

As constitutional diseases are often due to improper habits of living and various excesses, it is believed that fully 50 per cent. of the deaths from this cause could have been prevented.

Why is it necessary for a nurse to know the symptoms of syphilis?

Because syphilis is a contagious disease and the nurse should be able to recognize it in order to take proper preventive measures to protect herself as well as others.

TESTS

What do you mean by the Widal test?

The Widal test is a specific blood reaction which, when positive, establishes the presence of typhoid fever as existing or having recently existed in the persons from whom the blood was taken.

When is the Widal test used?

It is used when typhoid fever is suspected, and to establish the fact of immunity after prophylactic doses of typhoid vaccine have been given.

What is the object of (a) a "Wassermann" test, (b) a "Widal"?

(a) The object of a "Wassermann" test is to determine whether or not syphilitic antibodies are present in the blood.

(b) The object of a "Widal" test is to determine whether or not typhoid agglutinating bodies are present in the blood.

What is the Schick test for susceptibility to diphtheria?

In the Schick test for susceptibility to diphtheria, a measured amount of diphtheria toxin in 0.1 or 0.2 c.c. of solution is injected into the upper layers of the skin using a very fine hypodermic needle. A control injection of toxin killed by heat is made on the opposite arm. Within 24 hours a susceptible person will show an erythematous area in the region of the injection. Pseudo reactions often appear, but disappear in a short time; real reactions persist from three to six days and show slight pigmentation afterwards.

What should be done when school children show a positive Schick test?

They should be given a series of three injections of diphtheria toxin-antitoxin with an interval of one week between each injection and the next.

What is the Dick test? How does it derive its name?

The Dick test is a method of determining susceptibility to scarlet fever by the intradermal injection of a measured quantity of scarlet fever toxin. In susceptible individuals a macule appears in 12 to 24 hours which persists as in the Schick test for diphtheria. The Dick test is named after its discoverers, Drs. George and Gladys Dick of Chicago.

Name a blood test which is made to prove a diagnosis.

Schultze-Carlton is a test made to prove a diagnosis.

What is the cause of measles, and has a skin test for susceptibility to measles been discovered?

Ferry and Fisher, of Detroit, announced recently the discovery of a germ-producing streptococcus which by special culture methods they have isolated in pure culture from the blood of measles patients. This micro-organism is aërobic and furnishes an extra cellular toxin which in proper dilution will give a positive skin test when injected intracutaneously in those who have not had measles, and a negative reaction in those who have recovered from it. The technic is similar to that followed in making the Schick test for diphtheria. Protective serum against the disease has been developed in animals by these investigators as well as by Tunnicliff, who employs an immune goat serum.

In 1923, Caronia, in Florence, Italy, announced his discovery of a small round, anaërobic coccus in the pharyngeal secretions of measles patients with which he produced clinical measles experimentally. He also stated that this bacillus is agglutinated by the blood serum of patients convalescent or recovered from measles. The claims of these investigators are in conflict. Time and further experiment will be needed to absolutely establish the identity of the measles organism.

IMMUNITY, IMMUNIZATION, SERUMS, VACCINES

What is meant by immunity?

Immunity is a condition of resistance to the pathogenic germs of an infectious disease.

(a) Differentiate between natural, acquired, and artificial immunity. (b) What is natural resistance?

(a) Natural immunity is the possession by an organism of tissues that do not essentially furnish a favorable environment for the growth of a certain specific, pathogenic bacterium. The immunity of certain animals toward diseases harmful to man, and vice versa, is an example.

Acquired immunity is the condition produced in an organism by reason of having had an infection with a specific pathogenic bacterium, in which antitoxic substances have been produced unfavorable to the growth of this bacterium. This is sometimes known as active immunity.

Artificial immunity is the immunity obtained by injecting an organism with serum (antitoxin) from an animal which has been immunized to the toxin of a specific pathogenic bacterium. This is also called passive immunity.

(b) Natural resistance is the inherent resistance to bacterial infection possessed by the healthy organism. It is believed to be dependent on (1) the hydrochloric acid secreted by the stomach, (2) the alkaline digestive juices of the intestines, (3) the alexins, antitoxins and other bactericidal substances present in the blood of the healthy individual.

Name three diseases to which the human body may be immunized.

Smallpox, typhoid fever and diphtheria.

What are serums? Vaccines?

Blood serum is the clear fluid which separates from the corpuscles and clot in the clotting of blood.

A serum, in the therapeutic sense, is the serum from an animal which has been immunized by the injection of bacterial toxins in increasing doses until its blood serum acquires a marked antitoxic action and when injected into another animal produces a "passive immunity" in that animal.

Vaccines are suspensions of cultures of dead bacteria which when introduced into the organism produce therein an elaboration of protective substances and establish "active immunity."

How is diphtheria antitoxin obtained and why is it given?

Diphtheria antitoxin is obtained by injecting into a healthy horse an amount of filtered culture of the diphtheria bacillus, sufficient to make him ill, but not to produce death. When the animal has recovered from this injection, twice the amount is given to him, and this procedure is kept up until a dose one thousand times as strong as the original one has been given. The horse's blood is now loaded with antitoxic substances. From three to six litres of blood are withdrawn from the horse's veins; the blood is allowed to clot; the serum decanted and preserved by the addition of cresol or phenol.

The strength of this serum is expressed in antitoxic units. A unit is that amount of serum which will completely neutralize the effect of 100 lethal doses of toxin in a guinea-pig weighing 250 grams.

Diphtheria antitoxin is given in order to produce in the affected individual a passive immunity against the toxin produced by the invading diphtheria bacillus.

Briefly describe the preparation of serums.

(See "Antitoxin.")

Give the theory of immunity.

The theory of immunity is based upon the fact that individuals even though exposed to infection do not develop disease. The power which enables an individual to resist disease is spoken of as immunity.

What is infection? Susceptibility?

Infection is the condition produced by the introduction and propagation of pathogenic germs in the body.

Susceptibility is a diminished resistance to disease.

What are Diphtheria Antitoxin, Tetanus Antitoxin, Diphtheria Toxin-antitoxin?

Diphtheria antitoxin is a serum used to give passive immunity to Diphtheria.

Tetanus antitoxin is a serum used to give passive immunity to Tetanus.

Diphtheria toxin-antitoxin is a mixture of Diphtheria toxin and antitoxin used to actively immunize susceptible individuals to Diphtheria.

What is autogenous vaccine?

Autogenous vaccine is one derived from the micro-organism infesting the person to be immunized.

What is the function of the leucocyte in an infectious disease?

The leucocyte engulfs and destroys the invading bacterium after the latter has been prepared by the opsonins.

What are the natural protective agencies of the blood?

The four protective agencies of the blood are:

- (1) Substances which kill bacteria—bactericides.
- (2) Substances which kill and dissolve bacteria—bacteriolysins.
- (3) Substances which agglutinate or clump bacteria, agglutinins.
- (4) The power of the white blood cells—phagocytes—to engulf and digest bacteria—phagocytosis.

What are antitoxins?

Antitoxins are substances which combine chemically with toxins produced in the life cycle of pathogenic germs and render them harmless to living organisms.

Name three diseases which may be prevented by passive immunity.

Diphtheria, scarlet fever and tetanus.

What is prophylaxis?

Prophylaxis is the employment of precautions to prevent disease.

What substances antagonistic toward bacteria does the body contain?

The body contains alexins, or opsonins, and antitoxins.

Do severe local or general reactions usually follow the prophylactic injection of toxin-antitoxin?

Moderately severe local reactions sometimes occur, but very rarely. Severe general reactions are extremely rare.

What prophylactic means are observed in scarlet fever and diphtheria?

Scarlet fever and diphtheria may be prevented by producing an active immunity in susceptible individuals.

What advice should a nurse give a consumptive relative to the cures and medicines so frequently advertised to cure his disease?

The consumptive should be told:

(1) That tuberculosis in its early stages is an easily curable disease.

(2) That there is no specific for tuberculosis.

(3) But that a full, rich, easily digested diet, continual life in the open air in a cool climate, and rest and recreation will effect a cure.

(4) That patience and strict discipline are absolutely necessary.

(5) That advertised "cures" are harmful and sometimes dangerous.

What points would you consider the most important when investigating the surroundings regarding conditions, if sent to the country to nurse typhoid?

(1) The presence of other cases of typhoid in the neighborhood.

(2) The connection between these cases and the milk or food supply.

(3) The relation of these cases and the disposal of their excreta to the water supply—especially if well water is used.

(For other questions relating to hygienic measures for prevention and general hygiene in the care of typhoid fever and pulmonary tuberculosis, see appropriate headings under "General Nursing; Contagious Diseases.")

DISINFECTION

What is the actual value of dishes of germicidal solution placed about a sick room?

Dishes of germicidal solution placed about a sick room have no actual value.

Name some of the most common disinfectants used.

Sunlight, heat, and chemicals such as chloride of lime, sulphur, and formaldehyde, are commonly used disinfectants.

How is the efficiency of certain disinfectants increased?

The efficiency of the gaseous disinfectants is increased by the presence in the air of the room to be disinfected of a certain amount of moisture.

What are good solutions for the disinfection of (a) clothing, (b) the hands?

(a) Clothing may be placed in 5 per cent. solution of phenol or formalin. (b) The hands may be dipped in 1 to 1000 solution of bichloride of mercury or 50 per cent. alcohol.

How would you care for mattress and pillows after infectious disease?

Fumigate in an air-tight closet with formaldehyde vapor for 8 hours. Then expose to fresh air and sunlight for 24 hours.

How would you disinfect yourself after nursing a contagious disease?

By taking a hot bath in solution of bichloride of mercury 1 to 3000, shampooing the hair with soap and water followed by bichloride solution, removing all clothing, and, wrapped in a sterile sheet, going into a non-infected room and donning clean clothing.

What care would you give rubber goods?

See that they are not boiled in the sterilizer too long. Keep them away from acids, soap or grease.

Keep them in as air-tight receptacles as possible to prevent drying and cracking.

Use cold water as much as possible when cleaning with the minimum amount of soap. Rinse well in cold water after cleaning.

Hard rubber articles are temporarily softened by exposure to heat and lose their shape. If boiled insert stylet or probe bent to shape and keep it in place until the rubber hardens again on cooling.

Name some points that should be considered in choosing a disinfectant.

(1) The nature of the substances to be disinfected and the physical effect of the disinfectant upon them.

(2) The cost of the disinfectant in relation to its effectiveness.

(3) The practicability of applying the disinfectant directly to the article to be disinfected—for example, a small article should be disinfected by boiling, but a suit could not.

(4) The effect of the disinfectant upon the health of those coming in the house where it is used—some disinfectants are very poisonous.

What effect has prolonged sunlight on tubercle bacilli?

Prolonged sunlight, lasting from several minutes to a few hours, will destroy the tubercle bacillus.

Describe in detail the preparation of your hands before assisting at a surgical operation.

(See "Surgical Nursing.")

What is fractional sterilization?

(See "Surgical Nursing.")

Explain the difference between disinfection and sterilization.

Disinfection is the destruction of bacteria causing infection: sterilization is the destruction of all bacterial life.

What is an autoclave?

The autoclave is a device for sterilizing by means of steam under pressure.

Give exact method of disinfecting each of the following in the care of infectious diseases: (a) discharges and excreta; (b) linen; (c) utensils; (d) nurses' hands.

(a) To disinfect discharges and excreta 5 per cent. solution of carbolic acid or 2 per cent. solution of formalin should be used in a quantity at least equal to the bulk of the material to be disinfected. This solution mixed with the infectious material should be allowed to stand in a covered receptacle for at least half an hour before emptying into the sewer, or an hour, if it is to go into a privy vault. For sputum, the paper sputum-cup, or for nasal secretions paper handkerchiefs, may be used, and immediately burned or placed in disinfectant fluid.

(b) Linen should be placed in 5 per cent. carbolic acid or 2 per cent. formalin solution, pending complete disinfection by boiling.

(c) Utensils are best disinfected by being submerged in 5 per cent. carbolic or 2 per cent. formalin solution. In lieu of this, which is often difficult, they should be sponged and drenched with these solutions, allowed to stand at least one-half an hour, and then rinsed.

(d) The nurse's hands should be soaked in solution of bichloride of mercury 1 to 1000 *immediately* after any handling of the patient or his excreta or discharges, and then scrubbed with soap and water. She should *not* wash her hands nor touch her face, nor the furniture of the room, the door handle, etc., *before fully disinfecting her hands in this way.*

How would you disinfect a room after a contagious disease?

Having moved furniture to the centre of the room, suspended rugs and draperies, opened closets, drawers, etc., and sealed all cracks, keyholes, openings, etc., with paper, prepare a washtub by placing 6 inches of water in it and setting it in the middle of the floor. In this tub place a 5-gallon pail and place in the pail crystals of permanganate of potash proportionate to the air space of the room—250 grams of the crystals to every 1000 cubic feet of air space. On these crystals pour formalin, 500 c.c. to every 1000 cubic feet of air space. A violent ebullition occurs with the discharge of quantities of formaldehyde gas. The room should remain sealed for twelve hours.

When and why is it necessary to disinfect urine?

In persons infected by a disease such as typhoid fever that may be communicated by contact with urine. In such cases urine should be disinfected before being thrown into common sewer.

Name five disinfectant solutions, and give strength of each for some definite case.

<i>Name</i>	<i>Strength</i>	<i>Use</i>
Boric acid	Saturated solution	Eye wash
Iodine	3.5% solution	To sterilize wounds
Mercurochrome	5% solution	To sterilize the surgical field
Bichloride of mercury	1-1000 solution	To disinfect faeces
Lysol	1% solution	As a vaginal douche

FUMIGATION

Give the percentage of formaldehyde gas in formalin.

Formalin contains about 40 per cent. of formaldehyde in aqueous solution.

A room 20 feet in length, 15 feet in width and 10 feet in height is to be fumigated. Using one pint of formalin to every 1000 cubic feet of space, with potassium permanganate in the proportion of 50 grams of the crystals to 100 c.c. of the formalin, how much of each disinfectant will be required?

A room $20 \times 15 \times 10 = 3000$ cubic feet.

One pint of formalin to every 1000 cubic feet will give 3 pints of formalin as the required amount.

Three pints is 48 ounces. As one ounce represents approximately 30 c.c., 48 ounces represent 48×30 or 1440 c.c. Since 50 gms. of crystals are used to every 100 c.c. and we have 1440 c.c., the required amount of crystals would be 14.40×50 or 720 G.

For sulphur fumigation of above mentioned room, using 5 lbs. of powdered sulphur for every 1000 cubic feet, how much sulphur will be required?

As we have 3000 cubic feet, we would use 3×5 lbs. or 15 lbs. of powdered sulphur.

How would you prepare a room for fumigation?

Move the furniture away from the wall, hang the carpets, curtains, draperies, etc., on lines, open all closets and drawers, lower window shades, open books, etc., and arrange all the contents of the room so the greatest possible surface will be exposed to the gas. All openings about windows, cracks in the wall, registers, fireplaces, doors, keyholes, etc., should be sealed by pasting paper over them.

GENERAL NURSING MEDICAL DISEASES DEFINITIONS

Define pertussis, adolescence, congenital, coryza.

Pertussis, a communicable disease accompanied by convulsive coughing commonly known as whooping-cough.

Adolescence—the period between puberty and full adult development.

Congenital, present at birth.

Coryza, an inflammation of the mucous membranes of the nose, accompanied by abundant discharge.

Define: dyspnœa, dicrotic, depletion.

Dyspnœa means difficult breathing.

Dicrotic means having a double beat—as a dicrotic pulse.

Depletion means the therapeutic measure of relieving nervous or arterial tension by venesection, catharsis, abstinence, etc. Is applied also to a condition of exhaustion brought about in certain diseases.

Define desquamation. What protection is due the public when this is present after scarlet fever?

Desquamation is the shedding of the outer, or corium, layer of the epithelium which occurs after certain diseases. As it is believed that the desquamated skin is infectious after scarlet fever, the patient should be isolated until the desquamation is complete.

Define icterus, hemiplegia, chorea, arteriosclerosis, enuresis, epistaxis, malaise, embolism, anorexia, furuncle.

Icterus is jaundice.

Hemiplegia is paralysis affecting one half of the body.

Chorea is a convulsive purposeless twitching of the muscles

occurring frequently in the course of rheumatic fever or endocarditis.

Arteriosclerosis is a hardening of the median and intima coats of the arteries through replacement with fibrous, and sometimes, in larger vessels, with calcified, tissue.

Enuresis is involuntary urination.

Epistaxis is hemorrhage from the nose.

Malaise is a feeling of languor such as precedes the acute stage of infections.

Embolism is a condition brought about when a mass of coagulated blood or tissue is carried within the lumen of an artery or vein to a location where it lodges permanently and causes local tissue changes.

Anorexia is a loss of appetite.

Furuncle is a local inflammation about a hair follicle due to the staphylococcus—a "boil."

Define: (a) inflammation, (b) counter-irritation.

(a) Inflammation is the local reaction to irritation or injury of a tissue, which tends to repair or counteract the injury, and is characterized by pain, heat, redness and swelling.

(b) Counter-irritation is a procedure in which an irritant substance is applied to the skin of one portion of the body in order to relieve pain or congestion in another part of the body adjacent to or beneath the irritated surface.

Define extravasation.

An effusion of fluid into the tissues from the walls of capillaries or lymphatics.

Define decubitus.

(a) The recumbent or horizontal position, or

(b) A form of bed-sore due to trophic lesions.

How does lysis differ from crisis?

Lysis is the *gradual* decline of the body temperature from a febrile height to normal, while crisis indicates a *sudden* decline to normal.

Define cyanosis and give common causes.

Cyanosis is a blue color of the skin due to improper oxygenation of the blood. It may be caused by an obstruction in

the air passages, as in laryngitis, or by inadequate pulmonary circulation, as in cardiac dilatation, or congenital malformation of the heart, or by certain poisons that cause chemical changes in the hæmoglobin, as the coal-tar antipyretics.

Define epidemic.

Epidemic is designated to apply to the condition occurring when a large number of people in a large area are stricken at one time with a disease, as distinguished from *sporadic* disease—that occurring in isolated cases, or *endemic*, when it is restricted to a particular district.

What is syncope?

Syncope is a suspension of respiration and the heart's action, which may be complete without being fatal, as in severe hysterical lethargy, or partial, as in apparent death from which the patient arouses.

What is biliousness and how may it be caused?

Biliousness is an indefinite term used to designate a condition of intestinal auto-intoxication. It is characterized by headache or mental lethargy, furred tongue, indigestion and an excess of indol in the urine. It is caused by indiscretions in diet, and constipation.

Define: aphasia.

Aphasia is an impairment of the mental processes necessary to expression, due to a lesion of the brain.

Define eructation.

Eructation is any sudden burst of wind, solid, or liquid, from the stomach through the mouth.

Define traumatic.

Traumatic means caused by, or relating to, a wound, or injury.

Define flatulence.

Flatulence means undue generation of gases in the stomach or intestines.

Define: (a) emesia, (b) epistaxis, (c) rigor.

(a) Emesia is the act of vomiting.

(b) Epistaxis is nose-bleed.

(c) A rigor is a chill. Rigidity of muscles which have lost their irritability is also called rigor.

Define: Atrophy, Crisis, Heredity.

Atrophy is a wasting away of any or all of the body tissues. It is usually preceded by impaired or lost function in the tissue involved—as the atrophic muscles of the paralytic.

Crisis may mean (a) the sudden or spectacular turning point in a disease, as the fall of temperature in pneumonia; or (b) less often a paroxysmal disturbance when severe or spectacular, as the “gastric crisis” of locomotor ataxia.

Heredity is the predisposition transmitted to children from their parents.

Define helio-therapy. Define actino-therapy.

Helio-therapy is the term applied to the treatment of disease by the rays of the sun. A good example is the use of the sun's rays in treating tuberculosis of the bones and joints in children.

Actino-therapy is the treatment of disease by the use of actinic or ultra-violet rays of the mercury vapor quartz lamp or the carbon arc lamp. The treatment of rickets with these therapeutic lamps is an example.

Define: diagnosis, prognosis, prodrome.

Diagnosis is the recognition of a disease from a consideration of its signs and symptoms.

Prognosis is a judgment as to the probable course and outcome of a disease.

Prodrome is a preliminary symptom preceding the well-marked outbreak of a disease.

What do you understand by acute and chronic disease?

Acute disease is a disease of sudden onset and of definite duration, tending to terminate in recovery or death, or more rarely in chronic disease.

Chronic disease is of slow onset and indefinite duration, the tendency being to a continuance of the malady with little or no tendency toward recovery.

Define: (a) Bradycardia (b) neuritis (c) neuralgia (d) neuræsthenia (e) diabetes (f) thrombosis (g) basal metabolism (h) overflow (i) micturition.

(a) Slow pulse.

- (b) Inflammation of a nerve.
- (c) Pain in a nerve.
- (d) A condition of weakness or exhaustion of the nervous system, which causes various forms of mental and bodily inefficiency.
- (e) Inordinate and persistent increase in the urinary secretion.
- (f) Formation of a clot within a blood vessel.
- (g) The amount of energy produced by an individual at perfect rest fourteen to eighteen hours after eating.
- (h) The continuous escape of fluid, especially from the bladder.
- (i) The act of voiding urine.

What is the difference between a secretion and an excretion? Give two examples.

Excretions are waste substances which occur in the body metabolism and can serve no further purpose within the body, as urine and perspiration, while secretions are complex substances elaborated from the blood by glands and intended to serve a definite purpose in maintaining health—as the gastric juice and the saliva.

Define a chill, convulsion, coma, coma-vigil.

A chill is an acute paroxysm of shivering, accompanied by a sensation of severe cold, due usually to the congestion of the internal organs and the anæmia of the body surfaces which accompanies certain infections.

A convulsion is a paroxysm in which involuntary contractions of voluntary muscles occur.

What is pyelitis? uremia?

Pyelitis is inflammation of the pelvis of the kidney.

Uremia is the presence of increased urinary constituents in the blood stream and the toxic condition produced thereby.

Define: Opisthotonos, herpes zoster, leukopenia.

Opisthotonos is a form of tetanic spasm in which the head and heels are bent backward and the back is arched forward.

Herpes zoster is an inflammatory disease of the skin marked by development of groups of vesicles along the course of distribution of cutaneous nerves.

Leukopenia is a decrease in the number of white blood cells.

Mention an infectious disease, a contagious disease, a deficiency disease, a seasonal disease, a disease caused by an animal parasite.

An infectious disease is tetanus.

A contagious disease is scarlet fever.

A deficiency disease is scurvy.

A seasonal disease is typhoid fever.

A disease caused by an animal parasite is amoebic dysentery.

Define: hypertrophy, leukemia, hematemesis, atelectasis.

Hypertrophy is an abnormal increase in size of an organ or its parts.

Leukemia is a disease characterized by an abnormality of the white blood cells and associated with proliferation of lymphoid tissue of the body.

Hematemesis is the vomiting of blood.

Atelectasis is the defective expansion of the lung at birth or partial collapse of the lung.

Define: photophobia, ophthalmoscope, hordeolum, cataract.

Photophobia is abnormal intolerance of light.

An ophthalmoscope is an instrument for examining the interior of the eye.

Hordeolum is a sty.

Cataract is an abnormal density of the lens or lens capsule.

What is stomatitis?

Stomatitis is inflammation of the mouth.

Define aneurism, orthopnea, otitis media.

An aneurism is a dilatation of the walls of an artery.

Orthopnea is the inability to breath except in the upright position.

Otitis media is the inflammation of the middle ear.

Define rose spots, tic douloureux, sphygmomanometer, cachexia, sequelæ.

Rose spots are rose-colored skin lesions which appear upon the trunk during the first week of typhoid fever.

Tic douloureux is spasmodic facial neuralgia.

A sphygmomanometer is an instrument for recording arterial blood pressure.

Cachexia is general ill health with extreme malnutrition.

Sequelæ are any affections following or caused by a disease.

What do you understand by the term auto-infection?

Auto-infection is an infection caused, not by an external agency, but by organisms usually present in the body, which have for the time acquired a special virulence. The occurrence of a parotid abscess in typhoid fever through the extension of an infection from the mouth is an example.

What is auto-intoxication?

The absorption of toxins generated within the body as a result of disturbed metabolism.

Name a disease in which a crisis occurs.

Lobar pneumonia.

What is meant by the term constitutional disease?

A constitutional disease is one which is general and affects to greater or less degree the whole system. Examples of this class are rickets, gout, obesity.

Name a disease in which delirium is apt to come on suddenly.

Lobar pneumonia, especially in the young and in alcoholics.

What do you understand by the terms palliative and supportive treatment?

Palliative treatment is treatment directed toward alleviating, but not curing a disease.

Supportive treatment is treatment designed to build up the natural defenses of the body, through diet, fresh air, medication, and proper hygiene.

SYNONYMS

Give the synonym of typhoid.

Enteric fever.

Give the synonym of smallpox.

Variola.

Give the synonym of measles.

Rubeola.

Give the synonym for chicken-pox.

Varicella.

Give the synonym for epidemic poliomyelitis.

Infantile paralysis.

Give the synonym for whooping-cough.

Pertussis.

Sanitation in the
Islands.

GENERAL NURSING SYMPTOMS AND SIGNS

DEFINITIONS

What do you understand by cardinal symptoms?

By cardinal symptoms are meant the temperature, pulse and respiration.

What are prodromal symptoms?

Prodromal symptoms are the symptoms indicating the onset of a disease.

What are objective symptoms? Subjective symptoms?

Objective symptoms are signs visible or perceptible to the examining physician.

Subjective symptoms are those which can be perceived by the patient only.

TEMPERATURE

What special rules or points are to be remembered in taking the temperature, (a) by mouth; (b) by axilla; (c) by rectum? (d) What is the difference in the degrees registered under these conditions?

(a) When taking the temperature by mouth, be sure the patient has not had hot or cold food or liquid in her mouth within the previous half an hour, and that she is not an habitual mouth breather. Place the mercury end of the thermometer well under the tongue on either side of the mouth and see that the patient's lips are tightly closed and held in that position for from 3 to 5 minutes, depending on the kind of thermometer. No matter what the rapidity of the thermometer, the minimum should be two minutes. The mouth should not be used for taking temperature in patients that are unconscious, or suffering from dyspnoea, since these individuals cannot keep the lips closed; nor in the case of young children or delirious patients, on account of the danger that they may bite off the bulb.

(b) In taking axillary temperature, wipe out the axilla with

216 STATE BOARD QUESTIONS AND ANSWERS

cotton and place the thermometer bulb in the hollow of the arm-pit with the stem pointing anteriorly, and, bringing the patient's arm close to her side, maintain it in that position for 5 minutes.

(c) To take the rectal temperature, oil the bulb of the thermometer and insert it slowly and carefully. Allow it to remain for 5 minutes. If faecal masses are found in the rectum an enema should be given to remove them, as otherwise the reading will be too high. Rectal temperature should not be taken when the rectum is diseased.

(d) The normal temperature by mouth is 98.6° F. By axilla it is one-half to one degree lower, and by rectum one-half to one degree higher.

(a) Give the normal temperature of three different parts of the body, and (b) state what temperature would indicate an abnormal condition.

(a) 98° F. in the axilla, 99° F. in the rectum, 98.6° F. in the mouth.

(b) Over 99° F. and under 97° F. mouth temperatures are considered abnormal.

What is meant by body heat? By temperature? In what way do we account for increase?

Body heat is the heat produced in the tissues of the animal body, especially the muscles and secreting glands, as a result of the oxidation of food and tissue substances, and also to a lesser extent by the friction of joints, muscles, the circulating blood and by the ingestion of heated food.

Temperature is the degree of heat of any body measured by comparison with some standard of heat.

Increase of body temperature beyond 98.7° F., when the temperature is taken by mouth, is called fever. It is believed to be due to a disturbance in the nerve mechanism which regulates the production and elimination of heat, and is due most frequently to the absorption of toxic substances produced by bacteria.

PULSE

What is meant by pulse? Describe types of pulse.

The pulse is a wave in the blood-stream caused by the mass of blood forced into the aorta at each ventricular systole, and transmitted through the arteries.

High tension pulse is a pulse which it is difficult to obliterate at the wrist by pressure on the radial artery.

Low tension, or thready pulse, is a pulse which is easy to obliterate by pressure on the radial artery and which is, to the touch, small in volume.

Intermittent pulse is a pulse which shows pauses of unequal length between the beats—unequal rhythm.

Irregular pulse is shown when some of the pulse beats are of greater force than others.

What points are to be observed in taking the pulse?

Its rate, or frequency, rhythm, volume, force and tension or compressibility.

RESPIRATION

Describe three kinds of respiration.

Accelerated respiration is seen in many febrile diseases affecting the respiratory tract, as bronchitis and pneumonia.

It is shown in a marked increase in the normal adult rate of about 18 a minute, and especially when the normal rate of respiration to pulse of 1 to 4 is changed to 1 to 3 or 1 to 2.

Normal respiration designates the ordinary function of breathing, including both inspiration and expiration, and occurring at the rate of about 16 to 18 per minute in the healthy adult. There is a superior costal, or female type, and an inferior costal or male type.

Cheyne-Stokes respiration is a type of respiration in which the respirations at intervals either gradually decrease in volume almost to extinction, and cease altogether for a time, or else cease suddenly for a time. In both varieties the resumption of respiration occurs gradually.

What points should be remembered in counting the respiration?

Not to let the patient know that his respiration is under observation, to prevent conscious or unconscious inhibition. The rate rhythm (regular or irregular) should be described, as well as the amplitude (shallow or deep) and other conditions, as quiet or noisy, smooth or labored or stertorous.

What is Cheyne-Stokes respiration?

(See above.)

CONVULSIONS

(a) What would you do for a patient in convulsions? What special points must be noted and reported? Why is intelligent observation specially important in many such cases? (b) What do you consider the most important qualifications for a nurse for nervous or mental cases?

(a) In adults do little more than prevent patient from injuring himself. Loosen clothing, put a piece of soft wood or something similar between his teeth to prevent him from biting himself. Maintain him in recumbent position with head slightly elevated. See that the room is well ventilated.

In children, place the child in a hot bath, at about 112° F., applying cold to the head. Let him remain in bath ten minutes. Give also an enema.

The nurse should observe and report the time, frequency and duration of the convulsive movements, their nature, *i.e.*, whether tonic or clonic, their distribution, and any other manifestations that might be construed as symptoms.

Intelligent observation is necessary here in order to help the physician to discover the cause of the convulsion (whether uræmic, Jacksonian, epileptic, hysterical, etc.) and apply proper treatment.

(b) The nurse for mental or nervous cases should be healthy and strong, even-tempered and well balanced, tactful, sympathetic and patient. She should, of course, have had special technical training, and be conscientious in her work.

What is the difference between a tonic and a clonic convulsion?

In tonic convulsions the muscles undergo a long, continuous contraction without a sudden relaxation. In clonic convulsions contractions and relaxations alternate at short intervals.

How do hysteric fits differ from epileptic fits?

In the former the patient seldom injures himself by falling, biting the tongue, etc. The pulse is little changed, and while the eyes seem fixed, pressure over the supra-orbital nerve usually brings about a reaction. In epilepsy the patient falls into a true coma, and is entirely unconscious of his surroundings. To make the distinction between these two conditions is sometimes very

difficult, however, and convulsions may occur that are not due to either of these diseases.

What bath is indicated to relieve general convulsions?

A hot tub-bath, with ice-cap to patient's head, temperature of bath about 105° F., patient to be immersed about 10 minutes.

COMA

Define coma, coma-virgil.

Coma is a condition of absolute unconsciousness due to disease.

Coma-virgil is a state of coma sometimes accompanied by delirium in which the eyes remain open with dilated pupils and have the appearance of wakefulness.

Mention three conditions that might cause coma.

Epilepsy, uræmia, diabetes.

CEDEMA

Name some condition in which œdema appears.

œdema appears in decompensated heart disease, nephritis, in venous or lymphatic obstruction from any cause.

EXCRETA

What can be learned from the excreta—i.e., sputum, fæces, sweat, urine?

The quantity of sputum should be observed, whether scanty or profuse. It may be described variously as mucoid, mucopurulent, rusty prune-juice, watery, bloody, purulent, currant-jelly, fetid, nummular, etc.—each variety being characteristic of some abnormal condition of the respiratory tract—as the rusty sputum of lobar-pneumonia, or the nummular sputum of tuberculosis—and, therefore, valuable in diagnosis.

The fæces show certain characteristics in disease, valuable in diagnosis. They are examined by the naked eye for consistency, undigested food, mucus, blood, and the color is noted—yellow, green, etc. Parasites, such as the round worm, are sometimes seen. Microscopic examination may show the presence of undigested food elements, as fat, starch, meat, etc., as well as bacteria and the eggs of parasites.

The presence or absence of perspiration, the character—as the drenching sweats of malaria and sepsis, or the odor—as the

sour-smelling sweats of rheumatic fever, should be observed as important symptoms and signs.

The urine gives information of value in the diagnosis of diseases of the kidney, as nephritis, etc., and also of various metabolic diseases, as diabetes, intestinal toxæmia, etc. The quantity excreted in 24 hours, the color, odor, sediment, presence of albumin, sugar, casts, pus, etc., are noted.

Name two common causes for changes in odor of fæces.

The presence of bacteria and putrefaction due to constipation, or of lactic or other acids due to fermentation.

What excretions are dangerous in the following diseases: diphtheria, pulmonary tuberculosis, pneumonia, dysentery?

In diphtheria, the secretions of the mouth, nose and throat.

In pulmonary tuberculosis, the nasal secretion, sputum.

In pneumonia, the nasal, mouth and bronchial secretions.

In dysentery, the stools and urine.

What would the following indicate: pea soup stools, clay colored stools, black tarry stools?

Pea soup stools suggest typhoid fever.

Clay colored stools indicate biliary obstruction.

Black tarry stools indicate hæmorrhage into the gastrointestinal tract.

FEVER

† What do you understand by the terms: fever, specific fever, eruptive fevers?

Fever is a manifestation of disease in which the body temperature remains above normal.

A specific fever is a fever due to a known cause.

Eruptive fevers are diseases characterized by increase of temperature over normal and an accompanying eruption on the skin.

Define intermittent, remittent and continuous fever and give an example of each.

In intermittent fever there is a marked daily variation between maximum and minimum temperatures, the minimum reaching normal or subnormal, as in malaria or septicæmias.

In remittent fever the daily variation is marked, but the minimum temperature does not reach normal. Typhoid fever is an example.

Eruptive

In continuous fever the daily variation is slight, as seen in pneumonia (lobar) and scarlet fever.

What are the general symptoms characteristic of all fevers?

Fevers are characterized by elevated temperature, quickened respiration and circulation, faulty secretion and increased tissue waste.

HÆMORRHAGE

If a person was having a hæmorrhage from the lungs on the street, what would you do for him?

Have him removed without exertion on his part to the nearest place where he may be kept quiet, lying down. Give small pieces of ice to suck, an inhalation of nitrite of amyl (Hare), and summon a physician. If much blood is lost and the pulse becomes soft and weak, the extremities should be bandaged and normal salt solution administered by rectum.

How would you tell the difference between blood from the stomach and from the lungs?

Blood from the stomach is usually partly digested and has the appearance of coffee grounds mixed with mucus. Blood from the lungs is usually bright red and contains numerous air bubbles.

How do you recognize pulmonary hæmorrhage?

The blood is bright red, filled with air bubbles and very frothy.

In a case of pulmonary hæmorrhage what would you do before the arrival of the doctor?

Pending the physician's arrival in pulmonary hæmorrhage the patient should be placed absolutely at rest. An ice bag should be placed over the suspected seat of the hæmorrhage and small pieces of ice may be given to suck. Salt solution may be given by rectum.

Describe the symptoms of intestinal hæmorrhage. What would you do in a case?

The symptoms of intestinal hæmorrhage are an increase in the pulse-rate and the appearance of red blood, or blood clots, in

the stools. If fever has been present there is a sudden drop, sometimes to normal; in non-febrile conditions the temperature becomes subnormal.

The nursing treatment consists in keeping the patient absolutely quiet, stopping all nourishment, giving only ice by mouth, elevating the foot of the bed, and, if authorized, giving morphine by hypodermic.

What are the constitutional symptoms of hæmorrhage?

The first symptoms to develop are the production of a compressible pulse, later becoming rapid and sometimes irregular, accompanied by pallor and faintness. If the flow of blood is not stopped, cyanosis, especially of the extremities, and blanching of the mucous surfaces is seen, accompanied by air hunger, extreme restlessness, anxiety and extreme exhaustion terminating in syncope.

If a person was bleeding freely through the mouth what would you suspect and what would be your treatment?

Gastric ulcer or pulmonary hæmorrhage.

The patient should be made to lie down, with the shoulders elevated. The patient should be out-of-doors or by a window. All movement, even talking, should be forbidden. An ice bag may be placed upon the chest if it does not produce cough.

What is the usual treatment employed for epistaxis or nose bleed?

For a slight nose bleed the patient is laid flat on the back, and cold, usually in the form of compresses, applied to the nape of the neck and over the nose. In severe cases the nares may be sprayed with an astringent or mild styptic or plugged with strips of sterile gauze.

VOMITING

What may the following types of vomiting indicate: Projectile vomiting, coffee-ground vomitus, fæcal vomiting, mucus streaked with blood?

Projectile vomiting occurs in advanced peritonitis and in some cerebral diseases. Coffee-ground vomitus is caused by blood which has remained in the stomach for some time, as in gastric ulcer, cancer, scurvy, etc. Fæcal vomiting indicates intestinal obstruction or gastro-colic fistula. Mucus streaked with blood fre-

quently occurs after ordinary vomiting as a result of pharyngeal irritation.

What is the character of the vomitus in intestinal obstruction?

Vomitus in intestinal obstruction is early of the coffee-ground type, later it contains faecal matter, recognizable by its odor.

What care should the patient receive when vomiting?

Turn the head to one side if patient is in bed, and place a receptacle in position for the vomitus. Wipe out mouth with clean gauze, and if the patient is unconscious see that no vomitus is aspirated. If cyanosis occurs rapidly, clean the mouth out, push the jaw forward or pull out the tongue with tongue forceps.

State simple means you would use to check vomiting.

To check vomiting stop all food and liquid by mouth. If the vomiting then continues give a quantity of warm water to wash the stomach out, and again cease giving food and liquid. A hot-water bag or hot stupe to the epigastrium may also have a good effect.

What special observations should a nurse make when a patient vomits blood?

The amount vomited, the time in relation to ingested food or liquid, the manner (projectile or not), the color (bright red or "coffee-ground"), the presence of food, mucus or air-bubbles.

MISCELLANEOUS

Name three different characteristic clinical types of the tongue which have been given descriptive names and are found in different diseases.

1. The "strawberry" tongue, occurring in scarlet fever after the eruption has appeared.

2. The "typhoidal" tongue, seen in typhoid and other septic fevers.

3. The "geographical" tongue, a harmless form of glossitis.

What is tympanitis, and what measures would you use to relieve it?

Tympanitis is inflammation of the lining membrane of the middle ear or tympanum, usually due to an extension of inflammation from the throat via the Eustachian tube.

Syringing the ear with hot water, the application of dry heat to the mastoid, and the instillation of a few drops of carbolyzed glycerine (5 per cent.) may make the sufferer more comfortable.

In what conditions is severe jaundice a symptom?

In diseases of the liver and gall-bladder, and in certain forms of intoxication causing atrophy of the liver cells.

When charting perspiration as a symptom what points should be noted?

The nurse should record (1) the duration of the sweat, noting the time when it began and ended; (2) the extent, whether local, as when confined to the head, or general when the whole body is involved; (3) the amount, whether scanty, medium or "drenching" in quantity; (4) the odor, as sour, in rheumatic fever, etc.; (5) any accompanying symptoms, as chills, etc.

When is perspiration a favorable symptom and when unfavorable?

In any febrile disease terminating by crisis, if the pulse is of good volume and tension, perspiration is a favorable symptom.

When perspiration is accompanied by a cold external body surface, and a rapid, low tension pulse, in the course of a febrile disease, it is an unfavorable symptom, whether the body temperature be elevated or subnormal.

NURSING MEASURES AND PROCEDURES

BATHS

What is a bed-bath and how is it given?

A bed-bath is a bath given in the patient's bed when a tub-bath is deemed inadvisable. It is given in the following manner: (1) see that the room is warm and that no drafts are perceptible. (2) Bring a basin of water at 110° F. and wash-cloth, towels and soap, alcohol, talcum powder, and all necessary toilet articles to the bedside. (3) Assist patient to the side of the bed, and throwing a blanket over the bed-clothes, remove same under the blanket. (4) Remove patient's gown, and folding a blanket like a sheet, pass it under the patient in the manner that sheets are changed. (5) Proceed with the bath, washing in order, face, ears, neck, chest, arms, hands, abdomen, thighs, feet, pubes, uncovering, washing and drying only one member at a time. (6) The feet

should be washed last, placing them in the basin separately. (7) The under blanket may now be removed by having patient turn to side of bed, folding blanket like a sheet and withdrawing it after the patient again turns on his side toward the centre of the bed. (8) The upper bed-clothes should now be placed over the upper blanket and the latter withdrawn.

Make a concise list of the articles necessary to give a cleansing bath to a bed patient.

Face and bath towels, a bath blanket, wash-cloth, soap, alcohol, nail-brush, mouth wash, comb and hair-brush and a basin of water at temperature 110° F., should be brought to the bedside, together with such bed linens as may be required.

(a) For what purposes are cold packs usually ordered?

(b) Hot packs?

(a) Cold packs are usually ordered to reduce the body temperature in high fever or to allay nervous irritability. (b) Hot packs are usually ordered to produce perspiration and acid excretion in certain kidney diseases and to relieve spasm in kidney colic, gall-stone colic, and in convulsive seizures of various kinds.

State in detail your method of giving a general hot pack. What would you watch carefully?

To give a hot pack:

(1) Tie an ice-cap on patient's head. (2) Remove top bed-clothes and replace same with a blanket. (3) Pass a double blanket with rubber between layers under the patient from neck to feet. (4) Remove gown. (5) Place towel around patient's neck inside blanket edge, and cover patient with edges of blankets. (6) Heat a rubber sheet on radiator. (7) Soak two thin blankets in hot water, leaving an upper and lower corner of each outside, the corners being diagonally opposite. Wring the blankets dry, your assistant taking one dry corner and you the other. (8) Place rubber sheet in a foot tub and throw in the wet blankets and two hot-water bottles. (9) Carry to patient's bedside and pass one blanket under the patient, the other over her under the dry blanket. (10) Fold up the sides of the dry blanket covering the patient and tuck it well under her. (11) Tuck each opposite corner of blanket on which patient lies under her farther shoulder and side, fitting it snugly around the neck. Place hot-water bags at feet and sides of patient. Fold rubber sheet over the patient

and tuck her in with the lower blanket on which she lies and replace bed-clothes. A hot pack is usually 20 minutes in duration. At the end of this time fold down the bed-clothes once more to the foot of the bed and under cover of the dry blanket that was folded over the patient, remove the wet blankets and rubber; next dry the patient by giving friction over the dry blanket and then under cover of this blanket, wrap the blanket that was under the rubber around her, folding it as before; remove the blanket under which you have been working; place the towel between the blanket and the patient's neck. Leave the ice-cap on the head and a hot-water bag at the feet. Draw up the bed-clothes.

The pulse should be carefully watched, as owing to the depressing effects of the hot pack circulatory collapse may occur.

For what purpose is the hot pack used in mental disease?

To induce perspiration, relax spasm and soothe the central nervous system.

What precautions are necessary in case of continuous baths to a part or the whole of the body?

(a) To change the fluid every 6 hours; (b) to remove the part, or the entire body, from the bath once in 24 hours and to thoroughly scrub and disinfect the bath tub; (c) to keep the bath at the required temperature by the addition of hot fluid or by artificial means, and to guard against overheating the fluid; (d) in the case of a general continuous bath, to guard against contamination of the water by urine and fæces.

How would you give a sitz-bath?

The patient is seated in a small, round tub, with a sufficient quantity of water in it to reach from the buttocks to the waist line. A blanket is wrapped around the patient's legs and another over her shoulders. The temperature of the water, at first 100° F., should be raised gradually to the point of tolerance. The duration of the bath is usually about 10 minutes.

Name five varieties of packs or baths and the purposes for which each may be given.

The cold bath and pack are each used to reduce fever and act as circulatory stimulants.

The hot bath or pack is used as a sedative and to induce perspiration and increase elimination.

The hot mustard pack is used as a vasodilator remedy and as an antispasmodic.

The Nauheim bath is used as a remedy in cardiac and renal diseases.

The hot dry vapor bath is used to increase perspiration and relax peripheral blood-vessels..

How should a patient be prepared for a bath?

See that the patient has not eaten a meal within, at least, an hour. Cut the nails close and pin long hair to the top of the head. Remove clothing and clothe patient with bath-robe and slippers.

Give the temperature of hot, warm, tepid and cold baths.

Hot bath, 100°-110° F.; warm bath, 90°-100° F.; tepid bath, 80°-90° F.; cold bath, 40°-70° F.

As a district nurse how would you give a sweat-bath with dry heat in the patient's home?

To give this bath a small alcohol lamp will be required, also several blankets, rubber sheeting, ice-cap, towels, a piece of stove-pipe elbow and, if procurable, a piece of asbestos. Place a rubber sheet covered with a blanket under the patient, remove patient's gown, place several chairs over patient to form a cradle for the blankets, place a blanket covered by a rubber sheet well over these chairs, standing well below patient's feet and up to his chin and coming well down on either side so that a closed chamber will be formed. Arrange lighted lamp on chair beside the bed, place stove-pipe elbow over the lamp and let the other end pass under the blanket near one of the chairs, about three or four inches over patient's feet, being careful not to leave the blanket over the opening of the pipe. Tuck the blankets around the patient so as to leave no opening and place a towel between the blankets and patient's neck. Wrap asbestos or a wet towel around end of pipe as it passes under the blankets and fasten blankets about pipe in an airtight manner. Place ice-cap on patient's head, and thermometer, if obtainable, in an accessible place under the blankets. The temperature should be 130° to 150° F.

Note the essential points in giving a cold tub bath for the reduction of fever (typhoid or in insolation fever). Note the dangers to be guarded against, etc.

The essential points are to have a tub half-filled with water at about 75° F. near patient's bed, a suitable stretcher made of webbing with doubled canvas loops on each side through which poles may be run, a bath thermometer, cotton for patient's ears, an ice-cap or ice-water compresses for patient's head, hot-water bag and blankets and sufficient help to move the patient. Undress the patient, place stretcher under him, put cotton in ears, insert poles in stretcher loops and lift patient out of bed into tub, resting poles on tub edge. Support head while in tub and apply friction with hands rapidly to chest, back, abdomen and extremities, using cold compresses or ice-cap on patient's head. If no stretcher is obtainable let patient be lifted carefully by three people. Remove patient from tub carefully with stretcher or by hand. Cover him with a sheet and dry rapidly on draw sheet at side of bed. Have hot-water bag near patient's feet, cover with blankets and give a hot drink or a stimulant. Continued rapidity of the pulse after the initial plunge, or cyanosis, are danger signals and the patient should be removed from the bath immediately if the body friction does not restore the skin color and pulse tone. Great care must be used to prevent exertion on the part of the patient, as muscular efforts or straining may cause fatal hæmorrhage or perforation of the intestines.

Why are cleansing baths especially important in illness?

Because they stimulate the skin to proper elimination, remove waste matters from the body surface and promote the comfort of the patient.

How would you give a sponge bath for fever?

Prepare the bed with rubber sheet covered by a large towel, blanket or sheet, by passing same underneath the patient, having first removed all the bed-clothing except the upper sheet. Place a binder over the loins. Place an ice-cap at the patient's head, a hot-water bag at her feet, and then remove the sheet. Rub the skin briskly for a few minutes and then begin sponging from a hand-basin filled with water at the prescribed temperature with a well-wetted wash-cloth, using friction with one hand while you sponge with the other. Keep the patient's arms away from her

side and sponge the axilla frequently. Cold compresses are sometimes used in the axilla. A fair amount of exposure is necessary to facilitate evaporation; however, if the patient objects, she may be covered with towel or blanket as each portion of the body is sponged. The rubber, etc., should be removed as after any bed bath, and the body temperature of the patient recorded soon afterwards.

BEDS

Mention two important points in bed-making for the sick.

In bed-making for the sick it is important to keep the under sheet tight and free from wrinkles, and to this end the under sheet must be put on perfectly straight and well tucked in. The upper clothes must not be stretched too tightly, especially over the feet when the bed is occupied, and they should reach up to a height sufficient to cover the patient's shoulders.

Name some of the minor and unnecessary causes of discomfort to a bed-patient which a good nurse will instinctively avoid.

Wrinkled sheets, disordered pillows, unchanged position of patient, improperly placed lights, unsuitable room temperature or ventilation, delay in answering calls, whispering to another person in the room, rocking in a rocking-chair in the sick room, leaning against or sitting on the bed, banging or squeaking doors or windows, are unnecessary discomforts to the bed-patient.

What are bed-sores? How prevented and treated?

A bed-sore is gangrene, or death of a portion of tissue, due to defective nutrition of the involved part. It is caused by pressure of the bed and poor tissue vitality on the part of the patient.

Bed-sores occur most frequently over bony prominences, as the back of the head, shoulders, elbows, sacrum, heels and buttocks. Lowered vitality from any cause, old age, cedema, obesity and emaciation predispose toward them; moisture, crumbs in the bed, wrinkled sheets or lumpy mattresses, or lying too long in one position are active causes.

Bed-sores are prevented by (1) keeping the bed dry, using absorbent pads in involuntary micturition or bowel movement; (2) looking for crumbs after every meal, brushing them out, and preventing wrinkled sheets; (3) bathing the part with alcohol

and powdering at least three times in 24 hours, or oftener when predisposition exists; (4) turning the patient frequently, and protecting prominences with cotton or rubber rings; (5) when the skin shows signs of irritation, removing pressure, washing with water and alcohol, and powdering every three hours. In some instances it is permissible to paint the skin with flexible collodion.

Bed-sores are treated like granulating wounds, keeping the surface surgically clean, removing sloughs and dressing with gauze, being careful not to use strong antiseptic solutions on the devitalized tissues. Rubber or cotton rings should be freely used to remove the pressure of the bed.

How would you remove pressure from portions of the body likely to develop bed-sores?

By the use of rubber rings, not too much inflated, or rings made of cotton wrapped with bandage enclosing the affected parts in the lumen of the ring.

What is an air bed, water bed, bed cradle?

An air bed is an air-tight inflatable mattress.

A water bed is a rubber mattress filled with water.

A bed cradle is a frame for lifting the bed-clothes from painful extremities.

What special point should be observed in nursing a patient confined to bed for an indefinite time?

To protect the skin over the sacrum, back, elbows, and the other bony prominences so that pressure sores do not occur.

CATHETERIZATION

State in detail your method of catheterizing a female patient. If improperly done what is the danger to the patient?

Boil two glass or rubber catheters for five minutes. Fill a sterile bowl with 2 per cent. boric acid solution. Place these articles on a tray, containing also a basin to receive the urine and a package of sterile sponges which has been opened, and some lubricant. A sterile towel on the tray should enfold the catheters, boric acid solution and sponges.

The patient should lie on her back with her knees flexed

and separated. Turn down the upper bed covers, except the sheet, and, if cold, the blanket; loosen these at the post of the bed, turning the lower half of the blanket back over the patient's chest. Raise the sheet up enough to expose the patient's vulva and pubes.

The danger to the patient from improper catheterization lies in infection to the bladder from introduction of bacteria, or traumatic injury from the use of improper instruments or methods of technic.

Drape the sheet corners around patient's legs. Place the vessel to catch the urine in position and separating the labia with the left hand, the arm lying between the patient's legs, gently wash the meatus and adjacent parts with sponges moistened with boric acid solution, being careful not to touch either the meatus or the solution with the fingers. Place a sterile sponge under the meatus and dip the catheter in sterile lubricant. Glass catheters do not require lubrication, but care must be used before using glass catheters to see that they are not cracked, otherwise they may break off in the urethra. Holding the catheter in the right hand pass it gently into the urinary meatus, which lies just above the vaginal opening. Do not use force if a seeming obstruction is met with, as this is probably due to a nervous spasm. As soon as the bladder is reached the urine will flow. Pressure over the bladder with the left hand will accelerate the stream. As the urine ceases to flow, withdraw the catheter slowly, placing a finger over the free end as you withdraw it. Wash the meatus with boric acid solution.

(See "Catheterization" under Surgical Nursing.)

CLINICAL CHART

What is a clinical chart? What should such a chart show?

A clinical chart is a graphic record of clinical phenomena kept by a nurse or physician, in disease, or when disease is suspected. A clinical chart should show the temperature graphically, also the pulse and respiration, the amount of urine voided and the number of bowel movements. The accompanying record should show details of nourishment, medication, observation of patient and all the necessary details of a clinical nature.

DRY-CUPPING

Describe dry-cupping.

To dry-cup, have ready (1) several heavy glasses not more than 3 ounces in capacity, (2) a lighted alcohol lamp, (3) a small glass of alcohol, (4) a small metal rod with a piece of absorbent cotton wrapped around its end, (5) several cotton pledgets for additional swabs, (6) a glass of water to extinguish burning swabs, (7) towels and a blanket.

Wrap the patient's head in a towel, if a woman, to prevent fire and have the blanket close at hand. Dip the cotton swab in alcohol, light it, hold it in a cupping glass for a few seconds and then quickly press the latter over the area to be cupped. Repeat the procedure until the diseased area is covered with cups; then remove and reapply, after drying the cups, until the treatment has lasted fifteen minutes. If the skin under a cup becomes a deep red, the glass should be quickly removed by pressing a finger under the rim.

What is the object of applying dry cups?

To produce counter-irritation.

COMPRESSES

Describe the method of procedure of applying compresses to infected eyes.

The compresses are cut from absorbent cotton or several thicknesses of gauze or lint just a little larger than the eye. They must not cover the bridge of the nose and a separate compress must be prepared for each eye. If purulent secretion is present the same compress must not be used a second time, and those already used must be placed in a receptacle provided for that purpose. If the compresses are to be used hot, a basin of heated water or medicated solution should be at hand, kept at a uniform temperature by a small gas or electric stove. If cold, they should be wet against a lump of ice or surrounded by water or solution. The compresses being saturated with the fluid and wrung out are placed on the ice till cold, or, in the case of hot compresses, are held in the air until sufficiently cooled.

DISINFECTANTS

(See "Hygiene and Bacteriology." Also "Surgical Nursing.")

DOUCHES

What is a douche? Why given? Name kinds.

A douche is a stream of water directed against a part of the external surface of the body or applied to such cavities as communicate with the outer air.

Douches of the outer surface are used (1) to stimulate the nervous system by its dynamic effect, or (2) to apply heat or cold locally. Douches of the body cavities and the eyes are used (1) to cleanse; (2) to reduce congestion or inflammation; (3) to arrest hæmorrhage.

Varieties of douches include spinal, vaginal, intrauterine, nasal, pharyngeal, aural, and eye. (See "Douches" Gynecological Nursing.)

ENEMATA AND COLONIC IRRIGATIONS

How is a patient placed for an enema, and why?

In giving an enema the patient should lie on the left side or on the back, with the knees flexed, because the rectum runs to the left and backward and the abdominal muscles are relaxed by flexing the knees.

Give treatment of packed rectum.

About 4 ounces of warm cotton-seed oil are injected at night, using the long colon tube, the patient lying on his abdomen for half an hour afterward. In the morning the nurse should don rubber gloves and with the forefinger remove the softened masses of impacted fæces. This should be followed by a cleansing enema of soap suds, 1 quart, with 4 ounces of glycerine.

(a) For what purpose is a turpentine enema given? (b) a starch enema? (c) Describe preparation of each and method of giving.

(a) A turpentine enema is given for its carminative action to relieve meteorism or intestinal distention.

(b) A starch enema is given for its emollient action in irritable or inflamed conditions of the intestinal mucous membrane, or as a vehicle for the rectal administration of drugs.

(c) A turpentine enema may be prepared by adding oil of turpentine in the proportion of $\frac{1}{2}$ to 1 ounce to a pint of hot soap-suds, beating it up well, and administering immediately in the usual way. This should be followed by a pint of plain soap-suds enema.

A starch enema may be prepared by stirring a teaspoonful of starch in a little cold water until smooth, and then adding slowly 6 to 8 ounces of boiling water. Boil for one or two minutes and add hot water if needed to make the mixture of the consistency of cream. Allow enema to cool to 102° F. before giving it. As this mixture is rather viscid it is best administered by a bulb or piston syringe attached to a rectal tube.

How would you give an enema?

The method would differ according to whether the enema was intended as an intestinal irritant to promote bowel evacuation, or whether it was intended to be retained and absorbed. In purgative enemata of soap-suds, a quart, usually, of suds at a temperature of about 100° F. is placed in an enema-can with a long rubber tube to which a flexible colon-tube is attached. The bed should be protected and the patient not exposed but placed on her back or left side and covered with a new sheet. The can should not be raised more than 2 to 4 feet and the tube should be lubricated and passed slowly after the air has been expelled from it. The fluid should not flow in too rapidly.

If the enema is intended to be retained, it should be given low, with the can raised not more than 1 to 1½ feet above the level of the patient's abdomen and a small catheter should be used rather than a colon tube. The fluid should flow in very slowly to facilitate retention.

Mention a purgative enema and tell briefly how it should be given to a bed patient.

Soap-suds is a commonly used purgative enema. It is best given with the patient on his back, a pad being placed under him, and the bed-pan near by. The container should not be elevated more than three feet, and the rectal tube not inserted too high, and well lubricated before insertion. All the air should be allowed to run out of the tube before inserting it. When the enema has been given the patient should be quickly placed on the bed-pan, but encouraged to retain the enema for at least 5 minutes.

Name three examples stating when each is used: (a) enemata, (b) baths.

(a) Normal salt solution enema, used when a non-irritating enema is desired, especially for cleansing the rectum. Soap-suds

enema, useful in constipation. Nutritive enema, when food cannot be given by mouth.

(b) Cold bath, to reduce fever and stimulate. Hot bath to cleanse, promote elimination and act as sedative. Hot air bath, to promote perspiration.

What is an emollient enema and for what used?

An emollient enema is a soothing or non-irritant enema used to relieve local irritation, to check diarrhoea and as a vehicle for the introduction into the rectum of drugs given in small doses, as, for example, the tinctures.

Mention five points of importance in rectal medication by means of enemata.

- (1) The rectum should be free from faecal matter.
- (2) The medicinal substance, if it is to be absorbed, should be soluble.
- (3) The solution should be of the consistency of thin starch and be given at a temperature of 100° F.
- (4) The quantity should not exceed five ounces.
- (5) It should be administered very slowly and with a small well-lubricated, soft rubber rectal tube or catheter.

What special care must be taken to have nutrient enemata produce the desired results?

(1) The bowel should have been cleansed with a soap-suds enema at least once in the preceding 24 hours; (2) the bulk of the nutrient enema should not exceed 6 ounces, and it should be of the consistency of thick cream; (3) the enema should be given high, using the soft colon tube; (4) it should be given very slowly, almost drop by drop.

(a) Mention a stimulating nutritive enema, and (b) tell how to administer nutritive enema and what precaution the nurse should take before giving it.

(a) A stimulating nutritive enema is obtained by giving peptonized milk 6 ounces, glucose $\frac{1}{2}$ ounce, flour 1 heaping teaspoonful. Thicken the milk by heating it with the flour and add the other ingredients when lukewarm.

(b) The rectum should be cleansed thoroughly by administering a high injection of normal salt solution an hour before the enema is to be given. This cleansing should be practiced at least

once a day. The temperature of the cleansing enemata should be between 95° and 99° F., that of the enema to be retained 90° to 95° F.

A rectal tube or large catheter should be used. It should be lubricated thoroughly. The tube should be introduced high up (8 or 10 inches). The fluid should be allowed to flow slowly from a funnel or fountain syringe. After the injection the patient should lie as quietly as possible for at least an hour. The amount to be given should not exceed 8 ounces. The number of enemata to be used will depend on patient's condition; as a general rule 5 to 6 hours should be allowed to elapse between each feeding.

Give two good formulas for nutrient enemata.

(a) One egg.

Brandy 1 tablespoonful.

Milk 6 ounces.

Beat up the egg, add brandy and the milk. Heat to 110 degrees and add the contents of a peptonizing tube and set in a warm place for 2 hours.

(b) Glucose $\frac{1}{2}$ ounce.

Liquid peptonoids 1 ounce.

Water 6 $\frac{1}{2}$ ounces.

(a) Name five purposes for which colonic irrigations are given. (b) Describe the method of procedure of a colonic irrigation.

(a) In the treatment of intestinal disorder, especially those associated with chronic diarrhoea or chronic constipation.

For the destruction of seat worms.

As a local application to the mucous membrane of the bowel.

To reduce high temperature.

As a general stimulant to convey fluid to the circulation in conditions of shock and collapse.

(b) The patient lies on the back or the left side, unless especially ordered in the knee-chest position.

The irrigating tube, a fairly stiff rectal tube, is lubricated and inserted several inches into the rectum. The return tube is now placed several inches into the rectum with the free end into a bucket or douche pan. With the fluid turned on, the rectal tube is slowly pushed farther into the colon. If care and patience are exercised the tube may be inserted into the colon a foot or

more. The pelvis must be higher than the shoulders or the fluid will be expelled before it has a chance to reach very far in the colon. The return tube must be shut off at intervals so the lower bowel becomes somewhat distended in order that the irrigating fluid may reach all parts of it. The quantity ordered may vary from a couple of pints to several quarts or more. The irrigation may be a simple cleansing one or one that is given over a long period of time, an hour or more.

What is a common formula for a glycerine-turpentine and Epsom salts enema?

Epsom Salts	1 ounce.
Glycerine	2 ounces.
Turpentine	$\frac{1}{2}$ ounce.
Hot water	3 ounces.

GAVAGE AND LAVAGE

What is meant by gavage?

Gavage means enforced alimentation, especially the feeding of enfeebled infants by means of the stomach tube.

How does lavage differ from gavage?

Lavage means a washing process, usually used in connection with the washing of the stomach by means of the stomach tube, although it may also apply to the bladder or any body orifice.

Gavage is a term used to indicate the process of introducing food or medicine into the stomach through the stomach tube.

(a) State character of food, amount and temperature of food given by gavage. (b) When is gavage necessary?

(a) Concentrated food such as milk, cream and eggs are given by gavage in the amount of 100–300 c.c. at a temperature of about 105° F.

(b) Gavage is necessary in operations on tongue and jaw, strictures of oesophagus, in unconsciousness and insanity, tetanus and poisoning.

Name the articles necessary for lavage.

The necessary articles for lavage are (1) a stomach tube, not too flexible, and of sufficient length; (2) a funnel to insert in tube if not already attached to it. (3) A basin to contain coiled tube. (4) A wooden cork, or small rolled-bandage mouth-gag. (5) A rubber apron. (6) Towels and gauze with which to

wipe patient's mouth and to wipe tube. (7) Two-quart pitchers of water at 110° F. (8) A pail or slop jar.

Describe the technic of lavage of the stomach.

The lavage may be accomplished with the patient seated or lying down. A large towel is wrapped around the patient's neck, the rubber sheeting adjusted outside of this, and the bucket placed on the floor at a convenient distance.

The tube is moistened or lubricated with glycerine and the patient reassured, and told to swallow as the tube is passed gently into the mouth and pushed into the oesophagus for a distance of 18 or 20 inches. If the patient is in coma, wait a few minutes to see that the tube has not been passed into the trachea. If breathing and skin color are normal, and no air is being aspirated through the tube, it is safe to assume that the tube is in the oesophagus.

Now hold the funnel not more than a foot above the patient's head and pour from the pitcher a pint or two of fluid into the stomach. Then quickly lower the funnel to below the level of the patient's stomach and let siphonage occur. Before the funnel is entirely emptied refill it, while raising it slowly, being careful to always have some fluid visible *in* the funnel, in order to prevent the entrance of air. Repeat this until the fluid comes away perfectly clear. Withdraw the tube gradually, pinching it to prevent fluid flowing back into the pharynx.

Be careful not to force the tube roughly against the pharynx, and be sure to reassure the patient and enjoin him to breathe. Record the amount of fluid used and the condition of the washings.

HOT-WATER BAG AND ICE BAG

Give five points to be observed in giving a hot-water bag.

In giving a hot-water bag (1) be sure the bag is not too heavy, and therefore do not pour into it more than one-third of its capacity; (2) be sure the bag does not contain air; this may be accomplished by taking the cork out, holding the bag mouth downward and rolling it up from the bottom, unrolling it as it is filled with water, and squeezing it before corking so as to bring the water to the level of the mouth. (3) Do not have the bag too hot or too cold—150° or 160° F. is the maximum. Do not depend on the patient's word as to the proper degree of heat—

examine the patient's skin after applying bag for signs of unusual redness. (4) Be sure the bag does not leak; turn it upside down and see for yourself. (5) Place the bottle, stopper downward, in a flannel bag, or wrap it in a flannel cloth before applying it. Never apply a hot-water bag to an anæsthetized patient without a physician's order, and always in such cases place the bag outside the sheet covering the patient's body and have, if possible, a witness to see that it is safely placed. This will minimize the danger of hot-water bag burns.

How would you apply an ice bag?

A protector of cotton or flannel should be between the skin and the ice bag which has been half filled with crushed ice. It is important that all air is expelled from the bag; that it is not too heavy and that the bag moulds itself to affected part.

HYPODERMIC INJECTIONS

What points should be remembered in the giving of hypodermic injections?

The following points should be remembered in the giving of hypodermic injections: (1) The syringe should be in good condition—the piston not loose, the needle not bent or rusted, no leakage at the point of its attachment to the syringe barrel—and it should be tested by being filled with water or alcohol. It should be properly sterilized by boiling, if glass, or rinsing in alcohol, if metal. (2) The site of the injection should be in a location free from superficial veins and not over a bony prominence. It should be washed with soap and alcohol. (3) The patient should be told what to expect in the way of pain, and a delirious patient should be prevented from moving during the injection. (4) The injection itself should be accomplished rapidly, picking up the skin with the left hand and inserting the needle swiftly and well under the fold of skin so raised. The syringe should have been filled by drawing the medicament into it through the needle and then holding instrument point up, pushing on the piston to expel air. (5) The after-care of the syringe should include rinsing in water and alcohol, drying and placing a wire in the lumen of the needle.

How is a hypodermic injection given?

Boil the needle and syringe for 2 minutes, or, in an emergency, rinse same by alternately filling with and expelling 60 per cent.

alcohol at least a half a dozen times. Select a point preferably on the outer surface of the arm, or thigh, avoiding the inner surface, bony prominences and blood-vessels, and the female breast. Wash the selected spot well with alcohol on a sterile sponge. Pick up a large fold of skin and subcutaneous tissue between the thumb and second finger of one hand, and hold it firmly on the stretch. Hold the syringe upright and press the piston to expel any air. Insert the needle rapidly and firmly and deeply under the raised fold of tissue. Then gradually empty the syringe by pressing on the piston. Remove the needle, press the alcohol sponge against the puncture, and massage gently for a minute.

The solution for injection may be prepared by dropping a tablet in the syringe, attaching the needle and drawing up sufficient boiled water from a spoon or other receptacle; or by filling the syringe by drawing up water from a teaspoon in which it has been boiled, throwing away the remaining water in the spoon, placing a tablet therein, and alternately filling and emptying syringe on the tablet in the spoon until solution has been effected.

Name reasons why drugs are given by hypodermic injection.

1. For prompt action.
2. In unconsciousness or extreme illness.
3. In case drug is rendered inert by gastric secretions.
4. When drug is contraindicated by mouth.

Give two causes of abscess following hypodermic injections, and treatment to guard against them.

Two causes of abscess following hypodermic injection are (a) failure to disinfect the syringe or its contents, (b) failure to disinfect the skin of the patient.

Preventive treatment consists in sterilizing the needle and boiling syringe and contents before using, and preparing the patient's skin by washing with soap and water followed by alcohol.

Give two methods by which medicines may be administered to an unconscious patient. Which is the more effectual?

Medicines may be given to an unconscious patient by hypodermic injection when the substance to be given is suited to this

form of medication, or by rectal suppository. The hypodermic method is by far the more effectual.

Give a simple general rule for use when it is desired to give a fractional dose of a remedy by hypodermic, and only a tablet containing a fractional dose of many times the dose to be given is available for use—as for instance, when $1/60$ of a grain of morphine sulphate is to be given and a tablet of $1/4$ of a grain is on hand.

To give a hypodermic injection of a fractional amount of a drug from a tablet containing a greater fractional amount than the dose desired, observe the following rule: Divide the denominator of the fraction of the greater amount into the denomination of the fraction of the lesser amount. Multiply the product by ten. Measure out with your hypodermic syringe a number of minims of boiled water corresponding to the number obtained by this. Dissolve the tablet in this amount of water. Ten minims of this solution will contain the desired fractional amount of the remedy.

Example: To make a dose of $1/60$ of a grain of morphine sulphate from a tablet of $1/4$ of a grain: 60 divided by $4 = 15$. $15 \times 10 = 150$ (number of minims of water to be used to dissolve $1/4$ grain). 10 minims of this solution contains $1/60$ of a grain.

Proof: $1/4$ of a grain dissolved in 150 minims gives ($1/4 \div 150$) $1/600$ of a grain in each minim of the solution. In 10 minims of the solution are $10 \times 1/600$ of a grain or $1/60$ of a grain—the amount desired.

IRRIGATION

Describe your method of irrigating the ear.

Fluids should be warm— 105° to 115° F. Too much force should not be used, and the patient should be seated so that the light falls on the ear. The nozzle should be placed just inside the meatus and the fluid should be directed toward the upper part of the canal, and not directly against the tympanic membrane. If a fountain syringe is used it should be held on a level with the ear, thus avoiding pressure.

What are the dangers involved in an eye irrigation?

Infection of the other eye if it is not already infected.

Injury to the cornea.

MASSAGE HEAT AND LIGHT

What is meant by active and passive movements?

Active movements: The patient produces the movement.

Passive movements: The patient or subject is acted upon.

Why is abdominal massage given?

Abdominal massage is given to stimulate digestion, to relieve constipation and in obstetrical cases to contract the uterus.

Give one method of applying (a) moist heat; (b) dry heat.

(a) Moist heat may be conveniently applied by means of the flaxseed poultice. (b) Dry heat is conveniently applied by means of the hot-water bag or electric pad.

Outline the benefit to a patient from the following treatment when properly indicated and prescribed: (a) Local baking; (b) General massage; (c) Diathermy.

(a) Local baking will relieve pain and effusion in sprains, arthritis and other diseases of joints, muscles and tendons.

(b) General massage in individuals of a flabby type in whom active muscular exercise is contraindicated, will promote oxidation and excrete waste products, and promote physical and mental vigor.

(c) Diathermy will apply the effects of heat deeply in body tissues, and is useful whenever deep heat therapy is indicated. It is used in bronchitis, pneumonia and similar inflammatory conditions.

POULTICES

How would you make and apply (a) a flaxseed poultice; (b) a mustard poultice; (c) an ice poultice?

(a) To make a flaxseed poultice have a clean basin well heated, a kettle of boiling water and a sufficient quantity of the flaxseed meal. Pour some boiling water into the heated basin, letting the meal sift rapidly into the water through the fingers of the left hand, stirring the mixture with a spatula or knife. When the pasty mixture will drop clean from the spatula, it is of the right consistency. It is then turned on a square of muslin, spread evenly with the spatula and the ends tucked over all around. The poultice is then carried to the bedside in a heated

towel and applied directly to the skin. It should be overlapped with light rubber sheeting and a layer of cotton outside and overlapping the rubber, and it should be retained in place with a binder or bandage.

(b) A mustard poultice is prepared by stirring into a flax-seed poultice just before spreading from one-tenth to one-sixth of its bulk of powdered mustard. The surface of this poultice should be covered with a thin piece of muslin and the poultice should not remain on the skin longer than from 10 to 20 minutes. It should be removed as soon as the skin is reddened.

(c) An ice poultice, or stupe, is a heavy compress of gauze wrung out in ice water and covered with oiled silk or muslin, rubber sheeting or tissue, with a layer of cotton outside as in the ordinary poultice, and kept in place by a binder or bandage. It should be removed as soon as the compress is lukewarm.

Give the equipment, procedure and precautions in giving sun baths, or heliotherapy.

The equipment for sun baths consists in a suitable table, dark glasses or protections for the eyes and the direct sun's rays.

The procedure is to expose the feet, legs, thighs, abdomen and thorax in the following order for a brief period the first day, increasing the time of exposure with each treatment.

Precautions in giving sun baths consist in the proper protection of the eyes and prevention of burns by over-exposure.

SALT SOLUTION

What is meant by iso-tonic as applied to salt solution? What is hypo-tonic salt solution?

Salt solution is called iso-tonic when its osmotic pressure is the same as that of lymph and blood. This comes about at a concentration of 0.9 per cent. strength or 9 grams of salt in 1000 c.c. of water. Hypo-tonic salt solution is a solution of considerably less strength in salt than the iso-tonic solution.

What is the normal content of sodium chloride in the blood?

Sodium chloride is found in whole blood in approximately 0.5 per cent. by weight (450 to 550 milligrams in 100 c.c.). A solution in water of sodium chloride 0.9 per cent. strength is iso-tonic with human blood.

State some of the conditions when normal salt solution would be indicated.

Normal salt solution is indicated in conditions when the body has lost much fluid, as hæmorrhage, diarrhoea, cholera, or where a septic condition is present, as streptococcus infection, or in post-operative shock, or when for any reason the stomach is unable to retain fluid.

What are the methods of administering normal salt solution?

It may be given (a) by mouth, (b) by rectum, (c) by hypodermoclysis, (d) by intravenous injection. The rectal administration may be in the form of an ordinary enema, or in repeated small enemata, or by the so-called Murphy or drip method, if continuous administration is desired.

In giving proctoclysis with an ordinary can and tube, how would you determine the flow, and how keep the solution warm?

In proctoclysis with an ordinary can the flow may be ascertained by watching the level of the liquid in the can, which should be only slightly raised above the patient's pelvis. An ordinary artery forceps clamped about the outflow tube will stop the flow, while raising or lowering of the can will control the rate of flow. The liquid may be kept warm by tying a couple of hot-water bags about the can, and covering it with a small blanket.

How would you conduct an enteroclysis?

Place the patient on his back or on his left side. A bed-pan or douche-pan is placed under him and the douche-can filled with the prescribed fluid is hung on a standard about 3 feet above the bed. A return tube connected with enough tubing to reach to a pail or slop-jar on the floor is made ready and introduced a few inches in the rectum after the irrigating tube has been introduced. The introduction of the latter is effected as in giving an enema, using the same precautions to exclude air from the tube. If this method is not satisfactory the return tube may be removed and the fluid siphoned out through the irrigating tubes attached from the can or douche bag, introducing a pint of fluid at a time.

Explain your method of making one quart of 5 per cent. glucose and 5 per cent. bicarbonate of soda solution to be used as an enteroclysis.

5 per cent. means 1 part in 20. To find the number of ounces each of sodium bicarbonate and of glucose that must be dissolved in a quart of water we will make a proportion as follows:
1 is to 20 as x is to 32 (the number of ounces in a quart).
Multiplying means by extremes we find:

$$20 x = 32$$

$$x = \frac{32}{20} \text{ or } \frac{8}{5} \text{ or } 1\frac{3}{5} \text{ ounces.}$$

$1\frac{3}{5}$ ounces of glucose dissolved in 1 quart of water will give a 5 per cent. solution.

$1\frac{3}{5}$ ounces of bicarbonate of soda dissolved in a quart of 5 per cent. glucose solution will give a quart of 5 per cent. solution each of glucose and sodium bicarbonate.

Tell how to give normal salt solution per rectum by a slow method.

Use an enema can with salt solution at 110° F., attached to the stand with a rubber tube of sufficient length and the special dropping apparatus designed to allow the solution to drip slowly—15 to 30 drops a minute—the Murphy method. Attach this tubing to the rectal tube, raise the can slightly above the bed level, regulate the drop properly and hang hot-water bags about the enema can and insert rectal tube, anchoring it in place with adhesive strips.

STUPES

What are stupes used for, and name two varieties?

Stupes or fomentations are used when it is desirable to apply moist heat locally. When a counter-irritant effect is desired, turpentine or tincture of camphor is sometimes added to the stupe. Tincture of opium is sometimes added when a sedative effect is desired.

How would you prepare and apply a turpentine stupe?

To prepare a turpentine stupe take a doubled piece of flannel or old blanket of the required size and sprinkle on one side of

it about a teaspoonful of turpentine. Have ready a large basin and a heavy crash towel. Place the towel in the basin with the ends projecting several inches, place the prepared flannel on the towel and pour boiling water on the flannel to saturate it. Carry the basin to the patient's bedside, wring out the flannel in the towel, using the projecting dry ends to exert tension, and when the stupe is dry, apply it to the patient's skin in the desired location. Cover with rubber sheeting an inch or two larger in each diameter, place above this a thick layer of cotton, and fasten all together in place with a bandage or binder.

MISCELLANEOUS

What is a suppository? Describe method of introduction.

Suppositories are suitably shaped medicated solids which melt at body temperature, intended to be inserted into the rectum, or other apertures of the body. They are introduced into the rectum, or vagina, usually by pushing them with the finger anointed with a suitable lubricant.

Mention five varieties of suppositories.

1. Evacuant.
2. Astringent.
3. Anodyne.
4. Narcotic.
5. Specific, such as quinine.

In the customary routine ward work what are the nurse's duties in (a) the preparation of the patient for the day? (b) The preparation of the patient for the night?

While the routine varies in different institutions in detail, the following will cover most points:

(a) Preparation of the patient for the day: (1) Wash patient's face and hands and perform cleansing of mouth. (2) Administer any ante-breakfast medicines. (3) Serve breakfast or nourishment. (4) After half an hour give enemata or other treatments prescribed. Give body bath after a proper interval, and change bed linen.

(b) Preparation of the patient for the night: (1) Wash face, hands, arms, axilla and back separately with hot water and soap, drying each member before washing the next one. (2) Rub back with alcohol and dust with talcum powder. (3) Freshen bed

and pillows, dust out crumbs and see that ventilation is correct. (4) Attend to water, nourishment or medicine. (5) Turn down light.

How would you try to make a patient comfortable for the night?

Darken the room, see that the ventilation is sufficient, arrange the bed, bed linen and pillows, sponge face and hands and give an alcohol rub to back, give medicines or nourishment ordered, wash out patient's mouth and place the call bell where he may find it easily.

Give routine admission of a patient to the hospital.

Upon admission, the patient's name, age, address, name and address of responsible relative or friend are obtained. He is undressed and bathed, if condition permits, examined by admitting officer and is sent to the ward. His personal belongings and clothing are carefully recorded and taken care of. Upon arrival at the ward, he is put to bed, his temperature, pulse and respiration taken and the doctor is notified of a new patient's admission.

In nursing in a private family give in detail what record you would submit to the attending physician.

Any symptoms obtained by general observation of the patient; medicine, kind and quantity given, and time of administration; diet, amount and kind of nourishment and time it was taken; temperature, pulse, respiration; number, character and frequency of stools; amount and character of urine.

What is the duty of the nurse after the death of a patient?

Straighten the limbs and close the eyes by pressure, placing afterward cold compresses on each. Place false teeth in, if patient wears them, and close the jaw, holding it in place with a bandage. Wash the body, arrange the hair, place a large diaper with a pad in centre about the buttocks. Place a bandage about the knees and ankles and then put on nightgown. Tie wrists together, and cover body with a sheet.

In what way may the air of the sick room be contaminated?

The air of the sick room may be contaminated by inadequate ventilation, leaving excreta in the room, or having an unclean bath room near the room.

Give two reasons why bedrooms so situated that they get the morning sun are to be preferred.

Bedrooms that get the morning sun are more cheerful than those having no sunlight until the afternoon, and the airing and sunning of the room is best accomplished in the morning.

What nursing method may be used for the relief of nervous headache?

The application of cold compresses to the forehead or ice bag to the occiput.

What are the uses of steam inhalations?

Steam inhalations are valuable in infections of the upper respiratory passages and the bronchi, to relieve pharyngitis, laryngitis and bronchitis, especially when of an obstructive type, as catarrhal croup in children.

What precautions must be observed when using a steam kettle?

Two very important precautions must be observed; (1) To keep the patient so segregated from the kettle as to avoid scalding; (2) to make it impossible for the kettle to upset and ignite the bedding. While the use of electrical vaporizers will tend to prevent the latter, close supervision by the nurse is absolutely necessary.

What would you do if your patient was having a severe chill?

Apply external heat, hot-water bags and hot blankets, and give hot drinks—tea, milk, whiskey and hot water, as indicated. Use plenty of bed covers. Record the time of appearance, duration and intensity of chill and temperature afterwards.

Why is a chill sometimes of grave significance?

Because the progress of certain septic infections is marked by chills.

What simple measures could you use to relieve insomnia before resorting to drugs?

Make the patient comfortable by turning pillows, smoothing sheets, etc., and if necessary, bathing and massaging the body. A cup of hot milk or a small quantity of some simple food is frequently beneficial.

What may a nurse do to quiet delirium?

Give the patient a hot sponge bath or warm pack. Place ice bag to head, avoid anything tending to excite the patient, as conversation, lights, etc., and give such sedatives as may have been prescribed.

What means may a nurse safely employ for the relief of abdominal pain?

Usually, unless contraindicated, the administration of a soap-suds enema, or the introduction of the rectal tube, followed by the application of the hot-water bag or the ice bag.

How would you remove blood stains from linen?

Soak in hydrogen peroxide and rinse with cold water before sending to the laundry.

How would you remove iodine stains from linen?

Soak in ammonia water; rinse in hot water.

How may potassium permanganate stains be removed?

By washing in a strong solution of oxalic acid.

What disastrous results do we get from abscessed teeth and tonsils? Through what channels does the infectious material enter the general system?

Arthritis, endocarditis, osteomyelitis and nephritis are some of the bad results from abscessed teeth and tonsils. The infectious material enters the general system through the lymphatics.

Give immediate treatment of faintness.

Lower the head either by bending the seated body until the head is below the knees, or placing on a bed or sofa with the head lowered. Supply fresh air, loosen the clothing about the neck. If unconsciousness has occurred throw cold water on the face and chest to stimulate respiration and let patient inhale smelling salts or ammonia. A half teaspoonful of aromatic spirit of ammonia in cold water may be given if patient can swallow.

Give symptoms and treatment of a patient suffering from heat prostration.

Patients suffering from heat exhaustion become depressed physically and mentally and are unable to work or take nourish-

ment. The symptoms begin with giddiness, nausea, an uncertain staggering gait; there is pallor, the pulse is small, the heart's action weak, the respiration rapid, and the patient may quickly become unconscious. Muscular spasms are common. Externally the body may be clammy with sweat. The temperature may be as low as 95° F. Stimulants should be given freely and if the temperature is below normal the hot bath should be used.

What is the treatment of sunstroke?

In the milder forms of sunstroke in which pallor, giddiness, or syncope are the symptoms, rest and quiet in a cool place, the administration of stimulants such as $\frac{1}{2}$ teaspoonful doses of aromatic spirit of ammonia, and the keeping of the patient in the recumbent position will often arrest the attack. In the thermic fever type in which very high temperatures are found, sometimes with coma, ice baths or packs are useful, with cardiac stimulation by hypodermic injection and cold enemata.

What is the immediate treatment of a frost-bite?

Rub the part affected briskly with a lump of snow or a cloth wrung out of ice-cold water. Do not bring the patient into a warm atmosphere until the normal color is restored.

Explain method of removing an insect from the auditory canal.

Fill the ear with warm olive oil or any bland, thin oil. The insect will usually float to the surface of the oil and can be picked out. If this method is not successful take patient to physician to have object removed.

For what purpose is radium chiefly used in medicine?

Radium is chiefly used in medicine for the purpose of destroying new growths, especially carcinomata.

In what part of the eye should medicines be dropped and why?

Medicines should be dropped in the outer canthus of the eye in order to prevent their passage into the tear ducts which lie at the inner canthus.

What personal precautions should the nurse take in washing an infected eye?

To wear sterilized rubber gloves and not to touch her face or clothing afterwards until the gloves have been removed and her hands disinfected.

Give some points in routine intelligent care of the eyes of a bedridden patient.

The eyelids should be gently washed every day with a warm solution of boric acid. If much secretion is present a small amount of white petrolatum should be placed at the internal canthus every night. The patient, if allowed to read, should read only well printed pages, with adequate non-glaring light, and the light should be adjusted to fall over her left shoulder. If the bed faces a window, it should be reversed, so that even when not reading the patient will not have to lie facing bright light.

What care and precaution are necessary in nursing a case of trachoma?

Much care must be taken of the eyelids and the physician's directions closely followed. Trachoma is very contagious. Surgical disinfection of hands after treatments or handling dressings, etc., and thorough sterilization of all articles infected are necessary. The nurse should never touch her own eyes with her hands when nursing trachoma.

Give two reasons for anointing the skin in eruptive fever cases.

The skin should be anointed in the eruptive fevers: (1) because the oily substance will relieve skin irritation, and soften and help to remove the epithelial débris; (2) because it will also prevent bacteria-laden epithelial scales from being disseminated by the air currents.

In what diseases should a nurse give special attention to the mouth?

In diseases accompanied by fever, especially if long continued.

How do you care for the clinical thermometer after use?

The thermometer is thoroughly washed with water after use then allowed to remain in a reliable antiseptic solution.

PROCEDURES

Why are test meals given to patients?

Test meals are given to patients in order to ascertain (1) the rate of digestion, (2) the motor power of the stomach, (3) the amount of hydrochloric and other acids present.

Name a test meal and its constituents.

The Ewald-Boas test breakfast consists of 1 or 2 rolls, not less than 1 or more than 2 ounces in weight, a cup of tea without milk or sugar and 10 to 14 ounces of water. This is given in the morning before anything else has been taken, and is removed in an hour.

What preparation should a patient have for (a) a gastro-intestinal X-Ray, (b) a basal metabolism test?

(a) For a gastro-intestinal X-Ray picture the patient should have taken an effective purgative as two ounces of castor oil on retiring to completely empty the lower alimentary tract, and should take no food or liquid in the morning until told to do so when a sufficient number of plates have been made. Usually a glass of milk containing barium sulphate or bismuth subcarbonate is given to him at the laboratory just before the fluoroscope is used.

(b) A patient taking a basal metabolism test should be at the laboratory in the morning without having any breakfast and having taken no exercise. He should rest comfortably in a reclining position on a couch in the laboratory for at least one half hour before the test is made.

Give three reasons for performing spinal puncture.

(1) To determine the presence or absence of abnormal pressure in the brain and spinal fluid.

(2) To determine whether or not any variation from normal has occurred in the cell content of the spinal fluid, such as takes place in meningitis, poliomyelitis, and other inflammatory diseases of the central nervous system.

(3) To obtain spinal fluid for the complement fixation, or Wassermann test.

What is meant by the basal metabolic rate? How is it determined?

The metabolic rate is the rate obtained by any one of the various apparatus known as calorimeters which measure the heat

production of the body during a specified period of time. The "basal" rate is the rate obtained when the body is at rest. This measurement in human beings is usually made in the morning while the body is in a fasting condition and after a rest of a definite length, in order to exclude the heat production due to exercise or digestive processes. The respiratory calorimeter is the type most usually employed to determine the basal metabolic rate in human beings, and the determination is made by the chemical analysis of a carefully measured portion of expired air. This expired air is collected in a bag which is connected with a rubber mask to place over the face.

What symptoms may follow lumbar puncture, especially if the patient sits up or stands? O.K.
B/

Headache, rapid pulse, and syncope may follow lumbar puncture, especially when the patient assumes the erect position soon after the operation. X

MEDICAL DISEASES

HEART

What special points are to be observed when nursing patients with cardiac diseases?

(1) Rest: Patients should be kept absolutely at rest unless otherwise ordered.

(2) Diet: An easily digestible diet should be given and the bowels should not be allowed to become constipated.

(3) Careful record should be kept of the pulse, and respiration, and dyspnoea, cyanosis, oedema, and other untoward symptoms noted. The character of the pulse should be specially determined.

Give the symptoms of failing heart action.

Failing heart action is due to dilatation of the heart, resultant upon impairment of the muscular tone of that organ. An increase in the pulse rate, a diminution in the pulse tension, arrhythmia, especially in the aged, difficult respiration and cyanosis are indicative of failing heart action.

What do you understand by blood-pressure?

By blood-pressure is meant the pressure of blood against the walls of the vessels in which it is contained measured by

the number of millimetres which a column of mercury would be raised in a standard instrument known as a manometer.

Mention several nursing factors which are important in the care of cardiac patients.

(1) Vigilance of the nurse to prevent the patient who is obliged to stay in bed from rising and placing a sudden burden on his circulation.

(2) Care of the intestinal action, relief by enemata or otherwise as prescribed, since tympanites is disastrous to damaged hearts.

(3) Care of the diet to prevent indigestion, and consequent dangerous gastric dilatation.

(4) Use of sponging and other hydro-therapeutic measures, and proper arrangement of pillows to minimize the insomnia which often accompanies the air-hunger of heart disease.

Define (a) myocarditis, (b) endocarditis, (c) pericarditis.

(a) Myocarditis is inflammation of the heart muscle.

(b) Endocarditis is inflammation of the lining of the heart.

(c) Pericarditis is inflammation of the covering of the heart.

What is the normal blood-pressure of a healthy adult?

The systolic blood-pressure of an adult in health is 115 to 130 mm. The diastolic pressure is about 85 mm.

Define the terms: "hypostatic congestion" and "arteriosclerosis."

Hypostatic congestion is a congestion of dependent portions of the lungs occurring in asthenic diseases that necessitate a prolonged recumbent position.

Arteriosclerosis is a circumscribed or diffuse thickening of the walls of the arteries, especially the intima, which is secondary to certain degenerating changes in the media. It occurs most commonly after middle life.

What is the nursing care of acute endocarditis?

The nursing care of acute endocarditis is complete bed rest, easily digestible diet, free elimination and ice bag to præcordium constantly.

DISEASES OF BLOOD

Give outstanding dietary treatment in pernicious anæmia.

Liver and foods rich in iron such as egg yolk, meat, spinach and green vegetables comprise dietary treatment in pernicious anemia.

Name two types of anæmia. Differentiate between primary and secondary anæmia.

Two types of anæmia are primary and secondary anæmias.

Primary anæmia is due to disease of the blood forming organs.

Secondary anæmia is due to hæmorrhage, cancer or some other antecedent disease or injury.

Name two common reasons for examination of the blood.

(a) To find whether a pyogenic infection is present in the body as shown by an increase of leucocytes.

(b) To determine the degree of anæmia, if present, by counting the red cells and estimating the hæmoglobin.

What general rules for living should be observed in anæmia?

To spend a great deal of time in the fresh air; to sleep in the open air; to eat nutritious food; to take appropriate exercise; to properly regulate the bowels, and to drink plenty of water.

ACUTE RHEUMATIC FEVER

Name three conditions essential to the comfort and well-being of a patient suffering from an acute rheumatic affection.

(1) The affected part should be put at rest, wrapped in cotton and immobilized. (2) The patient should wear a nightgown of cotton flannel, easily removable, and frequently changed, to absorb the excessive acid perspiration. (3) A suitable diet consisting largely of milk and cereals should be given, with abundant water in addition.

Briefly outline the nursing care in rheumatic fever.

Active movement on the part of the patient should be forbidden; he should have absolute rest, to maintain his resistance and avoid heart strain. In severe cases the affected limbs should be wrapped in cotton and immobilized. To prevent pain cradles

should be placed over the affected limbs so that the weight of the bed-clothes will not rest on the inflamed region.

On account of the excessive perspiration the bedroom should be well aired, though warm, yet free from drafts. Flannel night garments are advised. The mouth and throat should be kept clean and the diet should consist largely of milk and alkaline waters. If baths are ordered, they should be given during the inflammatory period, so that the patient will not have to change his position in bed.

What complication is frequently found in inflammatory rheumatism?

Acute endocarditis.

What are the general characteristics of (a) arthritis deformans, (b) acute rheumatic fever?

Arthritis deformans, known also as rheumatoid arthritis, is a chronic affection of the joints, characterized by destruction of the cartilages, new osseous formation, immobility and deformity. It sometimes begins as an acute attack with fever, resembling rheumatism, but differs in affecting by preference the small joints and by causing permanent injury to some of them. Ankylosis of the wrists, knees, jaws, toes or spine eventually takes place, accompanied by contractions and deformity.

Acute rheumatic fever is an acute disease characterized by polyarthritis, irregular fever, acid sweats, and a marked tendency to endocardial inflammation. It frequently follows an acute attack of tonsillitis. The large joints, especially the symmetric ones, are generally affected, and become reddened and tender. The fever is irregular both in duration and course, varying from a few days to several weeks. Profuse acid perspiration is characteristic; permanent injury to the joints does not occur.

GASTROINTESTINAL DISEASES

Name five important factors in overcoming constipation.

- (1) Eat slowly; chew the food well.
- (2) Drink plenty of water; a tumblerful before each meal, and more on rising and on going to bed.
- (3) Keep a regular time for going to stool each morning.
- (4) Exercise in the open air as much as possible. Practice exercises that will strengthen the muscles of the abdomen.

(5) Diet: eat plenty of apples, oranges, prunes, "greens," tomatoes, rhubarb, oatmeal. Foods to be avoided because they cause constipation are: Milk, cheese, sweets, pastry, fried foods and tea.

Explain principles observed in medical treatment of gastric ulcer.

1. The control or obliteration of foci of infection.
2. The obtaining of gastric rest as far as possible by diet.
3. The neutralization of acidity.
4. Rest in bed.

The control of infection demands proper treatment of any foci, especially in the mouth or throat. Gastric rest is obtained by feeding very small amounts at frequent intervals of bland, easily digested foods or liquids. The acidity is overcome by the frequent administration of alkalis. Rest in bed is essential for several reasons; to lessen the demand for food, to keep the stomach as nearly at rest as possible, and to prevent any rise in blood pressure which may cause hæmorrhage.

What is peritonitis? Name causes, symptoms and dangers.

Peritonitis is an inflammation of the peritoneum, a serous membrane lining the abdomen and covering the organs contained therein. Peritonitis may be acute or chronic, according to the nature of the offending organism; it may be local or general, according to whether a part or the whole of the peritoneum be involved. Acute peritonitis occurs most frequently as a result of intestinal perforation, as in the case of perforating appendicitis, intestinal obstruction, typhoid ulcer, etc., and the invading organisms include the colon group and other pus-producing bacteria. The peritoneal infection may also be caused by external wounds, or through the blood. Chronic peritonitis is frequently caused by the tubercle bacillus following infection of the mesenteric glands by carcinomatosis or as a sequel to acute peritonitis. Pelvic peritonitis of an acute or chronic type may be caused by the extension of infection from the female genital organs.

The symptoms of acute peritonitis are severe abdominal pain, rigidity of the abdominal muscles, distention, usually flexion of the legs, a pinched expression of the features, an anxious look, and usually a high temperature with small, rapid pulse. Vomiting and obstinate constipation are usually present. In severe cases

collapse occurs, indicated by a fall in temperature, clammy skin, very rapid pulse and suppression of urine.

In localized peritonitis the symptoms are less severe and the physical signs are localized. Abscess formation is usual.

Chronic peritonitis shows little pain and little or no fever. Diffuse tenderness is usually found, and a distended abdomen with signs of fluid, free or sacculated.

General peritonitis is usually fatal, death resulting from intestinal obstruction, toxæmia and exhaustion. Localized peritonitis may also result fatally for the same reasons, but offers good chances for recovery under proper surgical treatment.

Cancerous peritonitis is always fatal, but tuberculous peritonitis frequently ends in recovery. Intestinal obstruction may occur in the chronic types and cause death.

Describe the general nursing management of peritonitis.

Usually no food is given by mouth and the use of salt solution enteroclysis given continuously is ordered. The patient is frequently placed in a semi-sitting position with the knees flexed, either in a special bed, or supported by pillows. It is essential to see that the container be at such a height that the salt solution may flow at the proper rate (60 to 80 drops a minute), that the rectal tube is in place, and that the temperature of the salt solution does not fall below 100° F. Rest for the patient is imperative, and the restlessness may be helped by frequent sponging with water and alcohol. Nutrient enemata are sometimes given before mouth feeding is resumed.

What symptoms following an abdominal operation would indicate peritonitis?

Symptoms of post-operative peritonitis would be inability of the patient to pass fæces or flatus, abdominal pain and distention; vomiting of a projectile type, the vomitus later containing fæcal matter, and an appearance of prostration—"the peritonitis facies," with rapid pulse.

ENDOCRINE GLANDS

What is the cause of myxœdema? Describe the appearance of the patient.

The cause of myxœdema is a deficiency in thyroid secretion. The appearance of the patient is characteristic. There is a

firm elastic swelling of the subcutaneous tissues. The skin and hair are dry. The speech is slow and all muscular movements are very slowly carried out.

Define goitre. Name two main types of goitre which are commonly seen.

Goitre is an abnormal enlargement of the thyroid gland. Simple goitre is a general enlargement of the gland which is apt to be seen to some degree in young girls at puberty or in the pregnant woman. It is a functional hypertrophy. As it is caused by a constitutional need for iodine, it occurs more commonly in inland regions, especially where the water contains a good deal of lime and little or no iodine. People who have been raised near the seashore suffer from it rarely or not at all. Very small daily quantities of iodine, or the eating of foods rich in iodine, as fish, will prevent simple goitre.

Exophthalmic goitre or hyperthyroidism, caused by an excess of gland secretion, is a chronic enlargement of the thyroid gland accompanied by marked neurotic tendencies, and especially by a projection of the eyeballs from which the disease takes its name. The circulatory system is involved early, with rapid pulse and various vasomotor phenomena. A distinct tremor is present and various nervous phenomena occur.

Define Grave's disease. Define Basedow's disease.

Grave's disease and Basedow's disease are both synonyms for exophthalmic goitre. Robert Graves, an Irish physician and Karl von Basedow, a German physician, who were contemporaries during the first half of the last century, were given equal credit for having first discovered and described exophthalmic goitre.

DIABETES

What is about the most important feature in the care of diabetic patients?

About the most important feature in the care of diabetic patients is the enforcement of the diet restrictions imposed by the physician.

Describe the usual treatment followed in diabetes, and why.

In diabetes a diet more or less free from carbohydrate is usually prescribed. Many physicians order at first a full diet

and estimate the amount of sugar excreted in 24 hours when the patient is on this diet. A diet free from carbohydrate is then ordered (bacon, eggs, greens, etc.) and an estimate made of the amount of sugar excreted under this condition. A small definite quantity of carbohydrate in the form of bread or crackers is then added to the dietary and the 24-hour specimen of urine examined to see if sugar appears. This quantity is gradually increased each day or so until sugar again appears in the urine. The "tolerance for carbohydrate" is estimated in this way and may be gradually increased up to a certain point. Fats, such as fat meats, butter, etc., are needed in diabetes to supply the energy deficiency caused by the cutting off of foods containing starch or sugar, but must be given in balanced amounts prescribed by the physician, otherwise ketosis may occur. Fresh air, moderate exercise and care of the skin are essential. Since the disease is simply a diminished ability of the body tissues to oxidize glucose, the feeding of improperly balanced quantities of fats, sugars and starches will load the blood with glucose, acetone, diacetic acid and other abnormal products of imperfect oxidation. For this reason the estimation of the exact quantity of carbohydrate and fat which can be tolerated by the individual is important.

In diabetic coma what is the usual treatment?

The usual treatment consists in the administration of insulin. If possible it is best to give it by hypodermic after a blood-sugar estimation has been made.

Why is it necessary to estimate the blood sugar in diabetic coma?

The blood sugar is estimated in diabetic coma in order to gauge the amount of insulin needed. Usually a total of not less than one-half a unit is given the comatose patient for every milligram of sugar per 100 c.c. of blood found in excess of 120 milligrams. This is injected in divided doses. Patients not comatose are given much smaller amounts than this.

What may follow an over-dose of insulin?

Insulin shock, or hypo-glycemia, shown by hunger, extreme weakness, abdominal pain, pallor, rapid, or irregular pulse, dilated pupils, and sometimes unconsciousness may follow injection of an over-dose of insulin.

What simple remedy usually available in a private house or hospital may be used as an emergency treatment for insulin shock pending the arrival of the physician?

Several ounces of orange juice may be given the patient in insulin shock pending the arrival of the physician, but the symptoms should be well understood and interpreted before doing this since hyper-glycemia will produce unconsciousness which may be mistaken for insulin shock, or hypo-glycemia.

When may insulin shock be produced with a dose of insulin ordinarily not too large for the patient?

When the dose is given during a starvation period rather than after food.

(a) What complications may occur in diabetes? (b) What treatment is instituted to prevent or cure diabetic complications?

(a) Pruritus of the genitals, gangrene or indolent ulcers, arteriosclerosis, acidosis and coma.

(b) Pruritus—dietetic measures to diminish the quantity of sugar in the urine, and local applications of alkaline solutions, or of carbolic acid solution 2 per cent.

Ulcers and gangrene—the avoidance of injuries, and immediate aseptic treatment of every wound of the skin.

Arteriosclerosis—a diet not too abundant in purin bodies and the prevention of intestinal toxæmia.

Acidosis and coma—sodium bicarbonate in large doses and the administration of insulin in proper quantities.

DISEASES OF KIDNEYS AND BLADDER

What is Bright's disease?

Bright's disease is a term applied to any one of a group of diseases of the kidney in which albumin is found in the urine—nephritis chronic and acute. The name comes from Richard Bright, an English physician who lived between 1789 and 1858, and who first described this group.

What is an alarming symptom in Bright's disease?

The occurrence of convulsive movements and coma.

What is acute nephritis and what are the symptoms?

Acute nephritis is an inflammation of the kidney, resulting from injury to the renal cells by toxic substances. These sub-

stances may be poisons produced in the body by faulty metabolism, or they may be produced by bacteria living in the body in an infectious disease, as scarlet fever, diphtheria, etc., or localized in the kidney, as in pyelitis. Nephritis may also be caused by drugs—alcohol, arsenic, mercury, etc. The symptoms are not constantly the same. Usually cedema of the ankles and eyelids will be present; headache, nausea, pain in the back, chilly feelings or fever, one or all of these symptoms may occur, or there may simply be a scanty urine containing albumin and casts, with or without blood.

Mention two important things to remember when nursing a patient with acute nephritis.

In nursing nephritis it is important:

(1) To measure carefully the amount of urine secreted daily, and note any sudden diminution—*i.e.*, suppression.

(2) To keep the room at a temperature not less than 70° F., and free from draughts, and to keep the skin active by bathing.

What symptoms would you watch for in a patient threatened with uræmic poisoning?

Uræmia is shown by headache, furred tongue, often nausea and vomiting, high-tension pulse and delirium or coma, with Cheyne-Stokes respiration, dyspnoea, and convulsions in many instances.

What would be the nursing care in uræmia?

In prevention it is important to have the excretory organs functionate properly, the bowels and skin especially. In treatment, hot packs or vapor baths are given to promote perspiration, with drastic purgatives such as the salines or croton oil. In giving hot packs care must be taken not to burn the patient, as uræmic subjects are often not sensitive. A folded towel should be kept in readiness, to place between the patient's teeth in the event of convulsions occurring.

Give briefly the principles of nursing treatment in uræmic coma.

Elimination and stimulation as follows: (a) give enema; (b) give saline purgative by mouth or tube; (c) use hot packs to promote perspiration; (d) such hypodermic medication as may be prescribed.

Distinguish between the terms retention and suppression of urine.

Retention of urine means that the bladder contains urine secreted by the kidneys, which the patient for some reason cannot expel.

Suppression of urine means that the kidneys have temporarily or permanently ceased to secrete urine.

(a) Give symptoms of retention of urine. (b) Of suppression. (c) What is the nursing care of suppression? (d) What do you understand by "retention with overflow"?

(a) The symptoms of retention of urine are inability to void, sensation of fulness over the bladder, pain and distention of the bladder.

(b) Symptoms of suppression are inability to void, headache, dizziness, disturbed vision and if catheterized, no urine is obtained.

(c) The nursing care of suppression includes purgation, careful diet, large quantities of fluids by mouth, hot stupes over the kidney region and diuretics.

(d) "Retention with overflow" means the passage of small quantities of urine without emptying the distended bladder in retention of urine.

What measures may be taken to encourage a patient to void urine before resorting to catheterization?

(1) Apply hot stupes or the hot-water bag over the bladder.

(2) Let patient be placed on the vessel and hear the sound of water trickling from one vessel to another.

(3) Give an enema (when permissible) of hot normal salt solution.

(4) Obtain the physician's consent in suitable cases to placing the patient in sitting position for urination.

How would you save a 24-hour specimen of urine and how prepare a specimen from the whole amount for examination?

Have the patient urinate in a covered vessel such as a slop-jar, which has previously been cleaned with boiling water, and into which half a teaspoonful of chloroform has been added. Note the hour of the day at which the patient last urinates, and throw that specimen away, but save all subsequent urine until

the same hour the next day, or the specimen may be collected in the ordinary manner and placed in a five-pint bottle containing 30 drops of chloroform. The receptacle should be kept in a cool place. The total quantity should be noted, and a quantity of the mixed urine, not less than 6 ounces, sent to the physician, together with a statement of the total amount voided.

What is meant by incontinence of urine?

Incontinence of urine means involuntary urination.

What conditions of the urine should you note in your record?

The amount voided, the time, and the odor, color, appearance and amount of sediment.

What is the normal amount of urine in 24 hours?

The normal amount varies according to age, sex, physical condition and body weight. In the adult it averages about 3 pints in 24 hours.

What is cystitis and how may it be caused?

Cystitis is an inflammation of the mucous membrane of the bladder. It may be caused by certain predisposing conditions, as congestion, traumatism, new growths and retention of urine, together with the presence of ordinary pus organisms, or the colon bacilli. The tubercle bacillus and the diplococcus of gonorrhœa will produce cystitis without other predisposing conditions being present. The most frequent avenue of infection is through the urethra, as in the operation of catheterization, although infection may also come through the ureters or the blood stream.

NERVOUS SYSTEM

What is hemiplegia?

Hemiplegia is a paralysis affecting half or one side of the body.

(a) Describe the appearance of a patient suffering from apoplexy, (b) alcoholism, (c) convulsions.

In apoplexy the face is usually flushed, the pupils are dilated or unequal, the respiration is stertorous and the muscles on one side of the face may be flaccid.

In profound alcoholism the face is usually flushed, the patient may show intervals of partial consciousness, his pupils will not

be fixed and unequal and no paralysis of the facial muscles on one side is seen.

In convulsions the face may not be flushed, the mouth shows salivary foam and, when the patient has bitten his tongue, blood. The extremities draw up and relax in clonic movement, usually, unless the convulsions are tetanic, when the movements are tonic. The pupils are not characteristic and paralysis is not present.

What precautions would you observe in nursing a case of apoplexy?

In the acute stage the patient should be kept perfectly quiet, in the recumbent position, ice applied to the head and the bowels emptied by enema. Anything causing a rise of blood-pressure, as excitement or muscular exertion, should be avoided.

What disease frequently accompanies chorea?

Rheumatic endocarditis frequently accompanies, or is accompanied by, chorea.

What is chorea?

Chorea is a convulsive disease characterized by irregular and involuntary movements of the limbs or of groups of muscles. It may occur as a distinct neurosis, or subsequent to various infectious diseases, and especially after articular rheumatism.

What are the symptoms of chorea?

The chief symptoms are irregular, nervous, involuntary muscular movements. The movements are hasty and beyond control and chiefly involve the upper extremities and the face,—grotesque movements of the hands or head and shoulders and facial grimaces are common. Sometimes the entire body is involved.

What is the nursing treatment of chorea?

Complete rest is essential. The child should be kept from school and from his usual companions who would be likely to ridicule him. Rest in bed is beneficial in all cases and is imperative in severe ones. No mental excitement should be allowed. The diet should be bland and non-irritating. Warm tub or sponge baths with cold applications to the head are beneficial.

(a) Give first aid treatment in apoplexy; (b) differentiate between apoplexy and syncope.

(a) The apoplectic individual should be kept lying down with the head and shoulders somewhat raised if possible. Clothing

should be loosened and no attempt should be made to carry or handle the patient until proper facilities are secured for doing so. The application of an ice bag to the head is advisable.

(b) Apoplexy is a cerebral hæmorrhage brought about by rupture of a cerebral artery. Syncope is sudden cerebral anæmia—fainting due to various causes.

What is apoplexy, and with what may it be confused?

Apoplexy is a term usually applied to the symptoms induced by the rupture of a cerebral vessel, with its accompanying increase of intracranial pressure.

Cerebral hæmorrhage or apoplexy may be confused with uræmia, opium poisoning, acute alcoholism or sunstroke.

COMMUNICABLE DISEASES

DEFINITIONS—TERMS—GENERAL MEASURES

Show why the term “communicable” is more accurate than “infectious” or “contagious” in speaking of certain germ diseases.

Infectious designates those germ diseases which are transmitted with or without direct or indirect contact with an infected individual, as distinguished from contagious, which would imply, in its restricted sense, only direct contact. Communicable would designate a disease transmitted by another individual either through direct or indirect contact.

Give an example of a communicable, a contagious, an infectious disease.

Any disease caused by bacterial invasion is infectious; an example is whooping-cough, which is also contagious, *i.e.*, a disease communicable by direct contact or touch.

A communicable disease, however, is an infectious disease communicable by either direct or indirect contact, as smallpox, measles, etc.

Name three communicable diseases which may seriously affect the nervous system.

Syphilis, diphtheria, tetanus.

Classify the following diseases according to whether they are caused by bacteria, protozoa or unknown organisms:

diphtheria, scarlet fever, malaria, smallpox, syphilis, pneumonia, measles.

Bacteria	Protozoa	Unknown organisms
Diphtheria	Malaria	Measles
Pneumonia	Syphilis	Smallpox
Scarlet fever		

Name five diseases which are spread through animal or insect hosts.

1. Malaria, through mosquito.
2. Tetanus, horse.
3. Tapeworm, beef or pork.
4. Typhoid, flies.
5. Rabies, dog.

Name some communicable diseases transmitted by insects. Give method of transmission.

Flies carrying infectious material from the patient's excreta to food or water may transmit cholera, bacillary dysentery, typhoid fever, diphtheria, scarlet fever and epidemic tonsillitis.

Mosquitoes of certain varieties may inject directly into the blood, when they bite, the parasites of malaria (the anopheles mosquito) and yellow fever (the stegomyia fasciata). Sleeping sickness is communicated by the bite of the tsetse fly. Bubonic plague is transmitted by the bite of fleas that inhabit infected rats. Typhus is conveyed by the bite of the louse and bedbug, and Rocky Mountain spotted fever through the bite of a tick.

Name several nursing measures used to prevent the spread of communicable diseases.

(1) Admission of air and sunlight to sick rooms in air-borne diseases, as the eruptive diseases.

(2) Sterilizing of water and milk used by others in the household, in the case of water-borne infections.

(3) Screening food from flies, and the banishing of flies from the sick room.

(4) Immediate cleansing of hands after attending the patient.

(5) Sterilization of dishes and spoons, of bed linen and handkerchiefs and clothing and all excreta.

What should a nurse do when leaving a contagious case in order to avoid communicating the disease to others?

She should boil all washable clothing used while nursing, take a complete bath, and a shampoo, and put on fresh garments before associating with others. An antiseptic alkaline mouth wash should also be used freely. If the patient was ill with diphtheria, the nurse should have a throat culture taken.

Name at least three of the dangerous communicable diseases against which specific protection is known, and name the agent which will afford this protection.

Typhoid fever may be avoided by injection with anti-typhoid bacterin.

Smallpox may be avoided by vaccination with cow-pox virus.

Diphtheria may be avoided by protective doses of diphtheria toxin-antitoxin.

Define: incubation, invasion, immunity, quarantine.

Incubation is the period between exposure to a disease and the appearance of the symptoms.

Invasion describes the appearance of active symptoms of a disease.

Immunity is the property by means of which an organism resists infection.

Quarantine is the term used to describe the detention of individuals in isolation for a space of time equal to the incubation period of a disease to which they have been exposed, or during the period in which they are actively contagious in the course of, or after recovery from, a communicable disease.

Name and describe the several stages of infectious diseases.

The stages of an infectious disease may be classified as follows:

(a) *Incubation* is the time elapsing between exposure to the infection and the appearance of symptoms, characterized sometimes by indefinite sensations known as prodromal symptoms. The period varies in different diseases.

(b) *Invasion*—the appearance of active symptoms.

(c) The *febrile period*—the period during which fever manifests itself, terminating in defervescence.

(d) In eruptive diseases the *eruptive stage* usually occurs at the time of the invasion period and continues throughout the febrile period, terminating at defervescence in desquamation.

State the period of incubation in the following diseases: scarlet fever, measles, diphtheria, smallpox.

The incubation period of scarlet fever is 1 to 10 days.

The incubation period of measles is 10 to 14 days.

The incubation period of diphtheria is 1 to 10 days.

The incubation period of smallpox is 1 to 3 weeks—usually.

The incubation period of mumps is 1 to 3 weeks.

The incubation period of chicken pox is 10 to 14 days.

(a) Name three contagious diseases most common among children. (b) What symptoms will you first observe? (c) Give time of incubation. (d) At what stage is each disease most frequently communicated?

(a) Measles.	Chicken-pox.	Whooping-cough.
(b) Coryza, photo-phobia, bronchitis.	Papular eruption.	Catarrhal laryngitis or bronchitis.
(c) 10 to 14 days.	10 to 17 days.	10 to 14 days.
(d) Febrile period.	Eruptive stage.	During catarrhal and whooping period.

Name five contagious diseases.

Measles, chicken-pox, smallpox, scarlet fever, whooping-cough.

How does the care of contagious diseases differ from the care of an infectious case?

Contagious diseases are usually transmitted by direct contact and the contagion is in one or more secretions or excretions. These secretions or excretions must be disinfected—example, the stools of typhoid. Infectious diseases are transmitted by direct or indirect contact. Precautions, such as wearing gauze masks, and strict antiseptic technic are necessary here.

Where may information concerning state laws and regulations to contagious diseases be obtained?

From the State Board of Health, directly, or through the municipal health officer.

Why do doctors and nurses have a greater responsibility than others in combating contagious diseases?

Because they have the necessary knowledge which the general public lacks, as to the necessity for and methods of preventing contagious diseases; especially since the prevention of these diseases is largely a matter of education.

(a) Who is responsible for reporting a communicable disease? (b) To whom is report made?

(a) The physician is responsible for reporting a communicable disease.

(b) The report is made to the local health office.

What do you understand by a unit in a communicable disease ward?

A unit is an area which includes one or more persons suffering from the same disease. The unit includes the bed or group of beds, bedside tables, chairs, gowns, thermometer, shelves, floor and walls of the area in which the patient or patients are confined.

What is meant by contact? susceptibles?

By contact is meant a person who comes into the immediate vicinity of, or touches a patient with a contagious disease.

Susceptibles are individuals who are shown by positive skin tests to have no immunity for a contagious disease.

What is concurrent disinfection? Terminal disinfection?

Concurrent disinfection is disinfection of discharges and all infective matter throughout the course of the disease.

Terminal disinfection is the disinfection of the area in which the patient was confined after the recovery from an infectious disease.

How would you prevent infection from traveling from one sick child to other children who may be in a pediatric ward?

The infected child should be isolated, preferably in a room off the ward or a cubicle in the ward. The articles used by the child should be kept separate and sterilized after use. The attending nurse should not, if possible, give food or treatment to other children, or if this is not possible, she should wear a separate cap and gown when nursing the sick child and care-

fully wash her hands after each contact with the patient, before attending other children.

What responsibility has a nurse in the care of contagious and infectious diseases?

That the contagion and infection be confined to her patient and his room.

What precautions should a nurse use for herself when caring for an infectious disease?

For her own protection a nurse caring for an infectious disease should practice scrupulous personal hygiene. She should take a daily walk in the fresh air, and scrub her hands with soap and 1 to 5000 bichloride of mercury solution before eating her meals. She should also at this time brush her teeth and rinse her mouth with a suitable antiseptic, such as Dobell's solution. Meals should not, if possible, be eaten in the sick room, but when this is unavoidable the tray should not remain uncovered. In spraying or swabbing the throat of diphtheria or scarlet fever patients, the nurse should wear glasses over the eyes and gauze over the mouth and nose, to guard against coughing on the part of the patient. As the nurse's hands are often carriers of infectious materials, and the mouth, nose or eyes may be avenues of entrance for infection, the nurse should try not to place her hands on or near her face when caring for infectious patients.

Infection is thrown off by what organs?

All the excretory organs assist in fighting infection. The nose, tonsils, bronchi and lungs react against the pneumococcus and influenza group of bacilli; the intestines react as seen in typhoid, and in many infectious diseases the contagion is found in the urine. The body cells generally, and especially the white blood cells, play an important rôle and aid in the production of opsonins and antitoxic substances necessary to active immunity.

Describe different methods, or means, by which disease germs may be carried from the sick to the well.

Disease germs may be carried from the sick to the well:

- (1) By the air, as particles of floating dust (measles, scarlet fever, etc.).
- (2) By direct or indirect contact with the infected agent.
- (3) By food or water (typhoid, cholera, etc.).

(4) By direct inoculation through the broken skin (tetanus, syphilis, etc.).

(5) By bite of insects acting as hosts to a parasite (malaria, yellow fever, etc.).

How are the following diseases transmitted: diphtheria, measles, whooping-cough, chicken-pox?

Diphtheria and whooping-cough are usually transmitted by direct contact. The contagium of diphtheria is found in the secretions of the nose and throat; of whooping-cough in the bronchial secretions; of measles in the bronchial and nasal secretions and most excretions, and of chicken-pox in mouth and nose and in the fluid of the vesicles.

What are the general precautions to be observed in the care of all infectious diseases?

The patient should be isolated in a well-lighted, sparsely-furnished room, remote as possible from living rooms, and when practical, with a private bath. Bed linen and excretions should be disinfected. The nurse should never leave the room without disinfecting her face and hands, and wearing a clean gown over the clothing worn in the sick room. A cap should be worn over her hair in the sick room. She should change all her clothing before going out of doors, and rinse her mouth with a suitable antiseptic solution several times a day. She should not take her meals in the sick room, if possible. She should never touch her face, and especially her mouth or eyes, with her hands while nursing a communicable disease.

In the exanthematous diseases the care of the patient's mouth, throat and skin is important, both in nursing and as a preventive measure.

What is a frequent cause of infectious follicular stomatitis?

Perhaps the most frequent cause of the follicular form of infectious stomatitis is the bacillus of Vincent.

Infection may enter the body through what channels?

Through the alimentary tract, in food, as typhoid; through the respiratory tract, as influenza or pneumonia; through a skin abrasion, as syphilis, erysipelas, etc.; through inoculation by an insect bite, as malaria.

In what manner may a door knob be a source of infection?

When a nurse or attendant who has just cared for a patient with an infection of any kind grasps a door knob with a hand that has not previously been cleaned and disinfected, she will leave infectious material on the door knob to be passed on to others.

How long should a scarlet fever case be isolated?

How long should a diphtheria case be isolated?

How long should a case of measles be isolated?

A scarlet fever case should be isolated until desquamation has ceased.

A diphtheria case should be isolated till two consecutive negative throat cultures have been obtained.

A measles case should be isolated for at least four weeks from the onset.

How would you isolate a patient with a contagious disease in a private house?

One, or better still, two rooms with an adjoining bath should be used. These rooms should be preferably at the top of the house, and as isolated as possible from the rooms inhabited by the family. There should be plenty of sunlight in the rooms, and facilities for ventilating so that the air from the sick rooms will not have to pass through the rest of the dwelling. A sheet moistened in 1 to 5000 solution of bichloride of mercury is frequently hung in the doorway as a precaution against infected currents.

Articles not necessary to the comfort of the patient, ornaments, bric-a-brac, etc., should be removed from the room. No furniture should remain excepting what is absolutely necessary; rugs should be taken up and curtains removed. A plentiful supply of bed linen, proper utensils for disinfection, necessary medicines, etc., should be placed in the room and a method arranged of calling for such further articles as may be needed without leaving the room. The patient should then be brought in and the isolation begun.

Enumerate the points to be considered in choosing the best room for a patient with an infectious disease.

The room should be remote, as, for instance, at the top of the house. It should be capable of ventilation without allowing its air to pass through the remainder of the dwelling. It should

be well lighted and have abundant sunshine. When possible it should adjoin a bathroom, not to be used by other members of the household.

What instruction would you give to a mother if she consulted you regarding isolation?

(1) To choose a room, preferably with bath, in an unfrequented part of the house, with plenty of sunlight when possible.

(2) To remove carpets, draperies, books, etc., before placing patient in the room.

(3) To disinfect spoons, dishes, etc., with boiling water.

(4) To place all infected bedding and linen in antiseptic solution or boiling water.

Give in detail the preparation of a patient prior to his release from quarantine.

After recovery the patient should be given a warm bath, being scrubbed with soap over the entire body and the head shampooed. This should be followed by a bath and shampoo with solution of mercuric chloride, 1 to 10,000. The patient should then be rolled in a sterile sheet and taken to a non-infected room, and dressed.

(a) Why is it necessary to keep a wet sheet at the door of the room of a patient with a contagious disease? (b) Does this also apply to the room of a patient with an infectious disease?

(a) It is not absolutely necessary, but is a measure to prevent the germs getting outside in the dust of the room.

(b) No, unless the disease is one communicated by indirect contact.

Define a preventable disease.

One that may be prevented by precautions against exposure, or by some prophylactic measure—as smallpox through vaccination of the public and isolation of the infected.

What is a frequent complication of infectious sore throat?

One frequent complication of infectious sore throat is inflammation of the cervical lymph-glands.

CHICKEN-POX

What are the complications of chicken-pox?

Nephritis, pneumonia, arthritis and infected ulcers of the skin may occur in chicken-pox, although complications are comparatively rare.

What is the incubation period of chicken-pox?

The incubation period of chicken-pox is 14 to 16 days.

Give the symptoms of chicken-pox.

Usually a slight fever occurs, 100° F. to 102° F. with chilly feelings and malaise, though frequently this is absent. Within 24 hours the eruption appears, at first maculopapular and later vesicular. The vesicles appear in successive crops, on the trunk most abundantly, are superficial, unilocular, and are rarely umbilicated. Desiccation begins in 2 or 3 days, ending in a friable blackish crust. Usually there is no marking except a temporary redness under each crust.

How does the eruption of chicken-pox differ from measles?

In chicken-pox the eruption occurs on the first day; it appears in successive crops; appearing in greatest abundance on the body. Maculopapular at first, it becomes vesicular in a few hours. The lesions vary in size, are unilocular, are raised distinctly above the surface of the skin and are rarely umbilicated. Desiccation takes place in about three days, the vesicles becoming puckered at the periphery with a crusted, dried-blood centre.

The eruption of measles appears about the third or fourth day on the face or neck and spreads rapidly over the entire body. It is composed of very small, raspberry-red, smooth papules, which unite in groups having crescentic borders. There is some itching of the skin. No vesicles are formed and areas of white skin are seen between the groups of macules. In three or four days the eruption begins to fade and a superficial desquamation follows.

(a) What particular points should be noted in the observation of a rash in order to make an intelligent report to

the physician? (b) Describe the rash of chicken-pox. (c) Do you consider it necessary to isolate the patient?

(a) Note the time of the appearance of the rash, location, where it first appears, how it spreads, its color and its physical characteristics, as diffuse, spotted, etc.

(b) The eruption of chicken-pox appears suddenly; a crop of red papules appearing on the trunk, back and chest. The papules soon become vesicles and in 2 days the vesicles have become purulent. The pustules after two or more days dry with a brown crust which falls off. The macules appear in successive crops, so all stages of the eruption may be present at the same time.

(c) The patient should be isolated until all the crusts have disappeared.

MUMPS

Give common name for parotitis.

Mumps.

What are the symptoms of mumps?

Mumps is ushered in by chilly sensations, malaise and fever (101° F. to 103° F.), followed by swelling of one parotid gland. The swelling is felt in front of and below the ear and is pear-shaped and soft. The surrounding tissues are œdematous and the submaxillary glands swollen. The jaw movements are restricted and painful. Soon, in most cases, the other parotid is involved. The disease lasts from 5 to 8 days.

What is the time of incubation of mumps?

The period of incubation of mumps is 1 to 3 weeks.

What are the complications of mumps?

Orchitis in the male, or oöphoritis in the female, is the most frequent complication. This is seen most frequently in adolescence; rarely in childhood.

Deafness, suppuration of the gland, and pneumonia are very rarely encountered.

MEASLES

(a) Describe the rash of measles, its duration, its manner of spreading and disappearing. (b) What are the special

points to be considered in nursing measles? (c) What are the more common complications of measles?

(a) The rash of measles consists of slightly raised crimson spots that coalesce into crescent-shaped blotches which do not become confluent as in scarlet fever. The rash appears on the skin on the fourth day of the disease, remains from 2 to 5 days, and then begins to fade where first appeared, being succeeded by a fine, branny desquamation. The mucous membrane of the mouth and pharynx show the eruption before it appears on the skin.

(b) Aside from the general care of the febrile patient the measles patient should be strictly isolated until desquamation has ceased. The disease is very infectious during the catarrhal period, so nasal and bronchial mucus should be expelled on paper napkins which should be burned. The eyes will require special care. They should be shaded from the light and cleansed with saturated solution of boric acid.

Reading should be forbidden. The nose and mouth and pharynx should be kept clean by rinsing with a bland alkaline solution to prevent, if possible, otitis media. The room should be kept at a uniform temperature of about 70° F., and draughts guarded against to prevent chilling of the sensitive skin. Warm baths during desquamation and the anointing of the skin with cocoa-butter add to the patient's comfort and prevent diffusion of the desquamated material.

(c) The most common complications of measles are otitis media, broncho-pneumonia, acute laryngitis, chronic conjunctivitis, and purpura.

What are the symptoms of measles in addition to the rash?

A catarrh of the respiratory tract, photophobia and a moderate fever accompany the eruption of measles.

What is meant by passive immunization against measles?

Passive immunization against measles is a certain relative and transient immunity produced by injecting 10 to 20 c.c. of serum from convalescent measles patients to individuals who are in danger by exposure to the disease.

What are the special points to be considered in nursing measles and where is the contagium supposed to be contained?

In nursing measles it is important:

(1) To prevent the spread of the disease by isolating the patient for about 4 weeks.

(2) To protect the eyes from glare of light.

(3) To use baths and oily skin inunctions to relieve itching of the skin and fever.

(4) To relieve cough, when troublesome, by some respiratory sedative.

The contagium is believed to be present in the nasal and bronchial secretions.

DIPHTHERIA

How may the atmospheric condition of a room containing a diphtheria patient be modified to aid respiration?

A proper amount of moisture in the air of the patient's room will help to avoid stridulous breathing. This may be brought about by closing the windows at the bottom, opening them slightly at the top, and keeping a dish of water at the boiling point continuously in the room.

(a) What is the usual dose of diphtheria antitoxin for a child? (b) How would you prepare the skin for the injection? (c) How would you take a throat culture?

(a) The usual initial dose of antitoxin for curative purposes in a child is seldom less than 4000 units. (b) The skin between the shoulder blades should be scrubbed with tincture of green soap and water and then with alcohol, or it may be painted with tincture of iodine and alcohol equal parts. (c) Wrap the patient in a sheet so as to restrain the arms. Put mouth gag in patient's mouth to prevent clenching of teeth. Have assistant hold patient in position. Flame cotton plug in the tube containing the sterile swab and repeat with the tube containing solid culture medium. Remove the plugs holding them between fingers of the hand, holding tubes and withdrawing sterile swab, draw it across the tonsils and pharynx and then across the culture medium in the tube. Replace cotton plugs in culture tube and flame once more, and then immediately note name of patient and number on tube label or accompanying slip.

Name four complications which may follow diphtheria.

Four frequent complications accompanying or following diphtheria are acute nephritis, paralysis—especially of the palate muscles—myocarditis and broncho-pneumonia.

What special personal precautions should a nurse take against infection with diphtheria?

She should have three immunizing injections of diphtheria toxin-antitoxin, and have a Dick test done about four months later to learn whether she has acquired immunity.

Give the constitutional symptoms of diphtheria.

In faucial diphtheria, chills may usher in the disease, followed by moderate fever, malaise and sore throat. The fever is usually not high (102° – 104° F.) and its course is not regular. The pulse is rapid and feeble; the bowels are constipated; the urine is scanty and sometimes contains albumin; the prostration is extreme and out of proportion to the febrile symptoms. The child complains of sore throat, may refuse nourishment and the lymphatic glands are swollen. Laryngeal diphtheria is recognized by aphonia or a brassy, "croupy" cough, stridulous breathing and dyspnoea. Nasal diphtheria shows very grave constitutional symptoms, increased toxæmia, high fever and glandular involvement. Epistaxis, an offensive, watery, nasal discharge, and extreme prostration are present.

What is diphtheria?

Diphtheria is an acute infectious disease caused by the diphtheria bacillus, characterized anatomically by the formation of a grayish-white false membrane in the throat and respiratory passages, and clinically by sore throat, febrile symptoms and prostration.

What effect has diphtheria on the heart?

The toxin of diphtheria may cause myocarditis and cardiac dilatation, shown by syncope and rapid pulse, or it may cause degeneration of the pneumogastric nerve shown by vomiting, intermittent, and later rapid pulse, collapse, and death.

Describe the nursing care of diphtheria.

To carefully observe the patient, noting on the record especially rise of temperature, rapidity or intermittency of pulse, earache,

or husky voice, with or without brassy cough. The throat should be sprayed or gargled, the mouth washed if so ordered by the attending physician. Water should be given abundantly, the bowels kept in a soluble condition, and absolute quiet and rest enforced.

What is the exciting cause of diphtheria and where is it found?

The Klebs-Löffler, or diphtheria bacillus is the exciting cause of diphtheria and it is found on the mucous membrane of the nose and throat in affected individuals.

Is diphtheria as contagious as scarlet fever and measles? How can danger of contagion be avoided by the nurse?

Diphtheria does not seem to be so contagious as scarlet fever and measles. Danger of contagion may be avoided by keeping the throat and nose in a healthy condition, wearing a gown and cap and gauze over the face when giving treatments to affected cases, carefully sterilizing the hands after treatments, and most effectually of all, by taking an immunizing dose of diphtheria antitoxin if not already immune.

How should a nurse protect herself when cleansing the throat of diphtheria patients?

By wearing a cap and gown and rubber gloves and a gauze mask over her nose and mouth, taking care not to allow the patient to cough in her face. By burning all gauze, swabs, etc., used in treatment and gargling her throat with an antiseptic, and disinfecting her hands and removing the infected gown.

Differentiate between the throat in follicular tonsillitis and diphtheria.

While the only absolute proof that an inflamed throat is not caused by the diphtheria bacillus is in the bacteriological test, yet typical cases present certain differential points.

Tonsillitis	Diphtheria
Tonsils swollen and red and covered with tenacious mucus; or swollen, with yellowish follicular spots dotting the surface of the tonsils.	Throat shows ashy-gray membrane, not readily detached; bleeding surface when removed. Membrane not limited to tonsils, but found also on pillars, uvula, etc.

What preventive measures may be used to avert some of the complications of diphtheria?

Myocarditis, paralysis and nephritis are direct results of toxæmia, and the early use of sufficient doses of antitoxin is the best prophylactic. The prone position and enforced passivity on the patient's part may prevent the fatal cardiac dilatation in myocarditis; the use of sufficient quantities of water may relieve kidney irritation by diluting toxins and so help to prevent nephritis; keeping the mouth and throat clean may avert broncho-pneumonia and otitis, as well as severe cervical adenitis.

Mention the special adverse symptoms a nurse must watch for in diphtheria and state their significance.

Adverse symptoms to be looked for in diphtheria are sudden or progressive rapidity of the pulse, indicating that toxic myocarditis is occurring; brassy cough, with difficulty of breathing especially if finger nails become cyanosed, showing an invasion of the larynx by membrane and frequently requiring intubation; albumin in the urine, or the occurrence of a decreased amount of urinary secretion, caused by nephritis; the occurrence of cough with rise of temperature and local signs of broncho-pneumonia.

What is the safe method to determine when a diphtheria patient may be released from quarantine?

By taking repeated cultures of the patient's throat. If after a bacteriological examination two or three negative cultures are obtained the patient may be safely released.

SCARLET FEVER

Describe the rash of scarlet fever.

The rash usually begins in the throat and upon the neck, with or without itching. It is not marked on the face, excepting on the forehead and cheeks, the chin, mouth and nose appearing pale by contrast. The eruption at a distance appears a diffuse, rose-red pigmentation; on closer examination it is seen to be made up of fine, punctate dots, separated by minute areas of healthy skin.

What care should be given the skin in scarlet fever?

The skin should be bathed in warm water, morning and evening, to alleviate the itching, and afterward gently anointed

with a bland oily preparation—cocoa-butter, cold cream, etc., or a 1 per cent. solution of phenol in oil.

Give four symptoms of scarlet fever.

- (1) A fever.
- (2) A sore throat.
- (3) A pulse that is rapid out of proportion to the fever.
- (4) A diffuse punctiform eruption, scarlet in color, not marked about the mouth, nose, or eyes.

Outline nursing care in scarlet fever.

The room should be well ventilated and kept at the uniform temperature of about 70° F. The quantity of urine should be measured daily and the amount and appearance recorded. The mouth and throat should be treated with the antiseptic solution prescribed by the physician. Prior to desquamation and thereafter the body should be anointed with oil or cocoa-butter after a daily warm bath, to prevent the desquamation of infectious scales. Strict quarantine should be observed from the outset of the disease and maintained for about 2 months. The general treatment resembles that of other febrile diseases. At the end of quarantine all objects such as books, toys, etc., not capable of proper disinfection should be burned.

How and when is scarlet fever supposedly communicable?

Scarlet fever is transmissible by direct or indirect contact. The infection is contained in the body secretions, especially those of the nose and throat, and in the desquamating skin. It is present even before the eruption occurs and continues throughout the period of desquamation.

What are the two most common complications of scarlet fever, and what are the symptoms of each to be looked for?

Nephritis and otitis media are the two complications most common in scarlet fever. Diminution of the normal daily quantity of urine and the presence of albumin in the urine are the most reliable symptoms and signs of scarlatinal nephritis.

Otitis media is usually ushered in with a sharp rise of temperature and severe pain in the affected ear.

What precautions should be taken in scarlet fever to prevent complications?

To prevent *nephritis* the room should be kept at an even temperature, the patient not exposed to draughts, and water given abundantly by mouth. The quantity of urine voided, its appearance, and the presence of œdema should be looked for.

To prevent *otitis media* and glandular involvement the mouth should be kept free from sordes and frequently cleansed.

To prevent *cardiac dilatation* the patient should have absolute rest in bed, and be allowed no active exertion whatever.

To prevent *hyperpyrexia*, hydrotherapy should be used either as sponge baths, packs or tub baths.

Why are cold baths contraindicated in scarlet fever?

Cold baths are contraindicated in scarlet fever because in this disease the kidneys are already under a severe strain from toxæmia, and since cold baths diminish skin function, additional strain would be thrown on the kidneys.

Mention some symptoms which you would consider important as pointing toward sequelæ in (a) scarlet fever, (b) diphtheria.

(a) In scarlet fever, during convalescence, an appearance of œdema, or suppression of urine, would point toward nephritis; the continued enlargement of cervical glands with fever would indicate suppurative adenitis; pain in the joints would indicate arthritis.

(b) In diphtheria the most important sequel is post-diphtheritic paralysis. It occurs in convalescence and is usually shown by inability to swallow and regurgitation of food through the nose through pharyngeal paralysis, or by strabismus or ptosis, when the eyes are involved. Tachycardia or bradycardia would indicate pneumogastric neuritis.

State three reasons why hot baths are more beneficial to a scarlet fever patient than cold baths.

(1) Hot baths will stimulate the skin to action and relieve the burden on the damaged and overworked kidney.

(2) Hot baths will soften the scaling epidermis and facilitate its removal.

(3) Hot baths will have a general sedative effect and relieve the nervous tension accompanying the fever.

What food should be restricted for three weeks after scarlet fever, and why?

Meats and heavy broths should not be used for three weeks or longer after scarlet fever, to prevent the irritant effect of the meat extractives on the secreting cells of the kidney.

Describe in detail the procedure a nurse should follow in removing patient and herself from isolation following scarlet fever.

The patient should have a thorough cleansing bath, followed by a bath in 1 to 30,000 solution of bichloride of mercury. Clothing that has not been in the sick room is brought in in a bag and the patient dresses herself in it and leaves the room immediately. The nurse should follow the same procedure, after having seen to the fumigation of the room.

Mention some important adverse symptoms to be watched for when nursing scarlet fever, and state their significance.

Important adverse symptoms in scarlet fever are hyperpyrexia, due to rapidly spreading toxæmia; scanty albuminous urine, or suppression of urine, due to acute scarlatinal nephritis; rapid respiration with labored breathing or asphyxia, caused by oedema of the glottis, usually fatal; rapid and feeble pulse often due to acute endocarditis; pain or suppuration in the ear, due to infection of the middle ear; hæmorrhage from nose and mucous membranes, the hæmorrhagic type of disease causing death in one or two days.

For what is the urine tested in scarlet fever, and what foods should be avoided?

The urine is tested for the presence of albumin, indicative of scarlatinal nephritis. Meats and meat extractives should be avoided on account of their irritant action on the kidney tubules.

When may a scarlet fever patient return to school or work?

After the period of desquamation.

TYPHOID FEVER

Name five common complications in typhoid fever.

Complications in typhoid fever include intestinal hæmorrhage, intestinal perforation, phlebitis, bed-sores and pneumonia.

What do you know about typhoid fever?

Typhoid fever is an acute infectious disease, caused by the bacillus typhosus. Anatomically it shows inflammation in Peyer's patches, mesenteric glands and spleen. Clinically it is manifested by fever, headache, mental hebetude or delirium, abdominal distention, enlarged spleen, a rose-colored rash, and diarrhoea.

It is more prevalent during late summer and fall. Young adults are more susceptible and bodily fatigue predisposes. The bacillus gains access to the body via the alimentary tract, contaminated drinking water, milk, and uncooked vegetables being frequent causes of transmission.

The incubation period is 2 to 3 weeks.

Prodromal symptoms are fatigue, muscle-pains, often diarrhoea. Invasion is marked by fever and headache, the temperature rising about a degree a day, morning and evening, until at the end of the first week the evening temperature reaches 104°-105° F. It remains at or near the maximum for one or two weeks, then falls by lysis during a period lasting one or two weeks. Marked remissions characterize the temperature, especially during the third or fourth week. In children the temperature may rise abruptly. A slight cough or bronchial râles sometimes occur. The pulse becomes at first slow, then more rapid, soft, and dicrotic.

The expression is dull and lifeless, the face flushed. The tongue is tremulous and covered with a whitish fur, or when dry, with sordes.

The abdomen is more or less distended. Tenderness is frequent though not a constant symptom. From 1 to 6 pea-soup stools occur a day.

The eruption occurs between the seventh and tenth day, small, little-elevated, rose-colored spots occurring in crops over several days, chiefly on the abdomen.

The spleen is nearly always enlarged and frequently palpable.

Apathy, headache and irritability appear in mild cases; muttering delirium, stupor, "subsultus tendinum," carphologia and coma may occur in severe types.

The red cells and hæmoglobin of the blood are reduced, also the white cells—leucopenia. The Widal reaction is present from the seventh to the tenth day. The urine is concentrated and frequently albuminous. Retention sometimes occurs, especially

in toxic cases. Convalescence is slow—anæmia, lack of muscle tone, loss of hair and sometimes mental disturbances occur.

In addition to aggravated symptoms of fever, diarrhœa and tympanites, catarrhal pneumonia, hypostatic congestion of the lungs, hæmorrhage from the bowel and perforation of the bowel are the most dreaded complications.

Hæmorrhage occurs most frequently during the third week. A sudden fall of temperature and dark, tarry, or bloody stools are characteristic.

Perforation is shown by sharp, sudden pains, fall of temperature, tympanites, disappearance of liver dulness, leucocytosis and later peritonitis.

Relapses are not infrequent, sometimes following errors of diet, and occur most frequently in mild cases.

Give six rules for the prevention of personal typhoid infection.

(1) Disinfect excreta and urine by allowing them to stand for two hours in enough 5 per cent. solution of phenol to cover them.

(2) Throw all bed-covers and clothing immediately into 5 per cent. phenol or formol solution, afterwards boiling them. Disinfect dishes, bed-pans, etc., with similar solutions.

(3) After cleansing the patient, feeding him, or handling bed-clothes, do not touch anything else in the room, door knobs, pens, pencils, etc., without first washing and disinfecting your hands.

(4) Do not, if possible, take any meals in the patient's room.

(5) Eat none but cooked food; drink only boiled water and milk.

(6) When possible, have preventive vaccination against typhoid.

What are some points to be considered in the feeding of typhoid fever patients?

The diet should be adapted so as to be non-irritating, easily digestible and to leave little residue. Either a purely liquid diet of milk, buttermilk, broths, and cereal waters is given, or a modified soft diet consisting of the foregoing with soft-boiled eggs, toast or bread, custards, junket, ice cream, etc. In either event the nourishment should be attractively prepared and served.

The condition of the abdomen should be noted, as sometimes a change in diet will cause increased tympanites, with a corresponding distaste for food.

The patient's mouth should be cleansed after every feeding; this is of great importance.

What discharges from a typhoid patient should be disinfected?

The stools, vomitus, urine, nasal and bronchial secretions, and menses.

Mention the more important points to remember in the nursing care of typhoid fever.

Quiet: The patient must be kept absolutely at rest, in the recumbent position.

Bathing: Care must be taken to cause no exertion on the part of the patient when bathing him, as heart dilatation or intestinal perforation may result. In addition to the antipyretic baths, cleansing baths should be given daily.

The mouth and teeth should be cleansed before and after every feeding to prevent accumulation of sordes and infection of the parotid or the ear.

The skin, especially over bony prominences, should be cared for to prevent formation of bed-sores.

Position: Frequent change of patient's position is necessary to prevent hypostatic congestion of the lungs.

Water should be given frequently and in good quantity.

Enemata are frequently needed to relieve distention.

Catheterization may be required to relieve a distended bladder, therefore the amount of urine and time it is voided should be charted.

Disinfection in typhoid is most important. The patient should be kept scrupulously clean. All bed-clothes should be put into disinfectant solution on removal from the bed. The nurse, on leaving the patient's bedside, should not touch anything in the room, door knob, furniture or what not, until her infected hands have been sterilized.

Observation: To accurately observe and chart symptoms in typhoid is most important. The early recognition of hæmorrhage or intestinal perforation may devolve on the nurse.

How would you care for the mouth in typhoid fever?

Clean the mouth and tongue every morning with cotton applicators, using at first an alkaline antiseptic such as Dobell's solution, and then a mixture of glycerine with lemon-juice or hydrogen-peroxide. Rinse the mouth with an appropriate mouth-wash after every feeding. If the lips are dry apply vaseline or cold cream.

Mention some of the bad effects that may result from neglect of a typhoid patient's mouth.

Neglect of a typhoid patient's mouth, even for a day, may result in the accumulation of sordes, cracked lips or tongue, glossitis, middle-ear disease, parotitis, and, according to some authorities, reinfection of the patient.

What disposition should be made of excreta in typhoid fever where there is no sewerage?

Under such conditions the stools and urine should be placed in quicklime equal to at least 5 times the bulk of the excreta and allowed to stand at least 4 hours. Then the mixture should be buried in the ground, being careful to avoid drainage points leading to springs or wells.

Name a recent preventive treatment for typhoid fever.

A recent preventive treatment for typhoid fever is vaccination with a standard culture of killed typhoid bacteria—the so-called anti-typhoid vaccination.

What is the cause of intestinal hæmorrhage in typhoid fever?

The exciting causes may be improper food, straining at stool, excessive peristalsis as after drastic purgatives, or tympany. The predisposing cause is the typhoid ulcer found in the Peyer's patches of the ileum, which, with or without the previously mentioned exciting causes, may involve the blood-vessels in the intestinal wall.

What change in temperature and pulse occurs when a typhoid fever ulcer perforates?

The temperature falls suddenly and later rises to greater heights when peritonitis occurs; while the pulse rises immediately, and continues rapid and weak.

Name the disinfectant precautions you would observe in caring for a case of typhoid fever.

In the disinfecting routine of a typhoid patient the nurse should:

- (1) Wash the patient locally after every bowel movement.
- (2) Keep patient and bedding scrupulously clean.
- (3) All sheets and bedding should be placed immediately after removal in a disinfectant solution, as 5 per cent. formol. They should not be allowed to lie on chairs or the floor, or be carried by the nurse so as to come in contact with her uniform.
- (4) Nurse should not handle anything after contact with the patient until she has washed and disinfected her hands.

Mention two complications that may arise in typhoid fever that are directly traceable to poor nursing.

Intractable bed-sores may be traced to neglect in caring for the skin in the sacral region. Carelessness in attention to cleansing the mouth and teeth may cause glossitis or parotitis.

Give two symptoms of intestinal hæmorrhage and two symptoms of perforation in typhoid fever and state the nurse's duty in such emergencies until the arrival of the physician.

A decrease of temperature with a rise in the pulse rate and the appearance of blood in the stools are two symptoms of intestinal hæmorrhage in typhoid fever.

Perforation is almost invariably ushered in with a sharp, agonizing abdominal pain, causing the patient to cry out and lasting but a few seconds, while an increase of respiration accompanying a fall in temperature is usually present at this time. In either one of these emergencies the physician should be notified immediately, especially in the case of perforation of typhoid ulcer, when the delay of half an hour may prove fatal and disastrous. Pending the physician's arrival, all liquids and food should be withheld, ice bag applied to the abdomen, and if shock is present, the foot of the bed elevated, the nurse meanwhile carefully observing the patient's condition.

In an emergency what would you do for a patient having hæmorrhage from the bowel in typhoid fever?

(1) The patient should not be disturbed for baths or any other reason.

(2) The foot of the bed should be raised.

(3) An ice bag should be placed over the right lower quadrant of the abdomen.

(4) No nourishment should be given; and only small pieces of ice as liquid.

What degrees of temperature would you consider alarming in a case of typhoid fever?

Fever reaching 105° F. and continuing several hours a day for several days is an alarming symptom, especially if it cannot be controlled by hydrotherapy. The sudden drop from a high temperature to nearly normal or subnormal, especially if the pulse continues rapid, is alarming as an indication of hæmorrhage or perforation. Hyperpyrexia— 106° F. or over, is a very unfavorable symptom.

What is meant by a typhoid carrier?

A typhoid carrier is a person free from the symptoms of typhoid whose urine or intestinal discharges contain typhoid bacteria capable of producing the disease in individuals other than the carrier.

Why is flatulence a dangerous symptom in pneumonia and typhoid fever?

Flatulence is a dangerous symptom in pneumonia and typhoid fever because the distended stomach and intestine embarrass the already overburdened heart and diminish the excursion of the diaphragm.

PNEUMONIA

What is pneumonia? How many and what are the different stages?

Pneumonia is an acute inflammation of the tissue of the lungs, with rapid infiltration of the alveoli, characterized by high fever, cough and rusty sputum. Clinically, croupous or lobar pneumonia and catarrhal, or broncho-pneumonia, are recognized. The pneumococcus is usually the causative organism, though other organisms may be factors.

Croupous pneumonia is divided anatomically into: (1) the stage of congestion, (2) the stage of red hepatization, (3) the stage of gray hepatization.

Describe the onset of acute pneumonia.

Pneumonia, of the lobar type, usually begins with a chill, a sharp pain in the side and a rapid rise of temperature, and increased respiration. A cough is usually present but may not be marked. In children, vomiting or convulsions may replace the initial chill.

When does the crisis of pneumonia usually occur?

Usually on the 5th day, or 7th or 9th day; rarely on the 3d or 11th day, of the disease.

Describe some characteristic change that occurs in respiration in acute disease of the lung or pleura.

The respiration becomes more rapid and labored in all acute diseases of the lung, and expiration may have a grunting sound if pleurisy is present.

What are the symptoms of lobar pneumonia? When is the period of gravest danger?

Lobar pneumonia usually begins with a sharp chill and a pain in the side followed by a rapid rise in temperature. Temperature rapidly attains its maximum (104° - 105° F.) and usually after 24 hours remains high with slight daily remissions till the 5th, 7th, 9th or 11th day, when it rapidly falls by crisis to normal. Rarely it falls by lysis. There is dyspnoea, the respiration ranging from 40 to 80 per minute, and being in ratio with the pulse as 1 to 3 or 1 to 2. Cough is present, dry at first, but soon showing rusty sputum. The face is flushed or cyanosed, herpes are often present and delirium is frequently present. A marked leucocytosis is found.

The period of greatest danger in pneumonia is the day or two before crisis when the heart is burdened by the work of forcing blood through consolidated lung tissue.

What organs are, or may be, involved in pneumonia?

Pneumonia is an inflammation of the lungs including both air cells and bronchi. The heart and blood-vessels are subject to great strain and are usually involved in pneumonia; the kidneys, frequently so and the pleura very frequently.

(a) What position in bed would a patient naturally assume in pneumonia of the left lung? (b) In peritonitis?

(a) In the early stages of pneumonia of the left lung, where pleuritic pain is present, the patient would lie on his left side in an effort to limit the motion of that side of the chest, and diminish pain.

(b) In peritonitis the patient would usually lie on his back, with his legs flexed in an attempt to relax the abdominal muscles.

In nursing a case of pneumonia, what symptoms would you regard as unfavorable?

Continued high fever (above 104° F.), a pulse more rapid than 130 a minute, severe nervous symptoms, and cyanosis are unfavorable factors in pneumonia.

In the fresh-air treatment of pneumonia is there great danger of "catching cold"?

No.

(a) What is characteristic sputum of pneumonia? (b) The characteristics of blood from the lungs? (c) The characteristics of the stool in dysentery?

(a) The sputum of pneumonia is rusty or prune-juice in type.

(b) Blood from the lungs is bright red and is frothy from admixture with air.

(c) The stool in dysentery is loose, dark brownish-green in color and contains mucus and blood.

At what temperature would you keep a room in winter for a case of lobar pneumonia?

Not warmer than 68° F.

Briefly outline the general care of a pneumonia case.

(1) Conserve the patient's strength by limiting his movements, making him entirely passive. (2) He should see few or no visitors and must not be excited, in order to avoid, if possible, delirium. (3) Tympanites should be relieved by abdominal stupes, or the rectal tube. (4) Œdema of the lungs should be watched for, and the physician notified immediately of its onset. (5) "Heart failure," shown by rapid irregular pulse occurring suddenly, may come on at any time in pneumonia.

This should be anticipated with proper remedies left for such an emergency by the physician in charge. (6) When the fresh-air treatment is used, be careful not to restrict the motions of the patient's chest with blankets. (7) When the sudden, critical drop in temperature occurs, cover the patient with warm, dry blankets and place a hot-water bag at his feet. (8) Disinfect the patient's sputum, and take the same personal precautions as in any infectious disease. (9) The routine nursing corresponds to that of the other febrile diseases.

In the care of a pneumonia patient state all that the nurse may do in prevention of heart failure.

The conservation of the patient's strength by making it unnecessary for him to perform any voluntary movements is a valuable aid to the heart in the nursing of pneumonia. He should not be allowed to turn voluntarily, to reach for things, wipe his mouth, etc. Mental excitement such as may be occasioned by the presence of visitors should be avoided. Tympanites may seriously interfere with the heart action. It should be treated by enemata, by the insertion of the rectal tube, or by the application of turpentine stupes—any or all of these methods may be employed. Acute dilatation, or "heart failure," sometimes occurs with great suddenness in this disease, so it is well for the nurse to have an understanding with the physician as to what stimulants should be given in such an emergency.

(a) What is hypostatic pneumonia? (b) With what types of patients is it most liable to occur? (c) State special nursing care in its prevention.

(a) Hypostatic pneumonia is a consolidation of the bases of the lungs occurring in the condition known as hypostatic congestion.

(b) It is liable to occur in individuals having a weak pulmonary circulation, as the aged, those suffering from heart diseases of a chronic type, or from post-operative shock, and especially during the course of infectious diseases such as typhoid, if such individuals are allowed to lie too long in one position.

(c) Frequent change of the patient's position is essential in nursing care for prevention of this condition. The patient should alternately lie on one side or the other for not longer than half-hour intervals.

EMPYEMA

What is empyema and of what disease is it a sequel?

Empyema is the term used to describe a purulent exudate in the pleura. It is a sequel of pleurisy, especially of the variety accompanying lobar pneumonia.

What is the nursing care of empyema?

The nursing care of empyema before operation is similar to that of any febrile condition of a septic type. The diet should be bland, usually liquid, the bowels should be kept active by enemata or the prescribed laxatives, plenty of water should be given and cold sponges to control temperature. If chills and septic sweats occur, hot-water bags and blankets should be provided during the chill, and a warm alcohol rub and a change of linen after the sweat. After operation it will be the nurse's duty to see that the absorbent dressings are in place and that the drainage tube does not become occluded. Later the patient must be induced to take the prescribed exercises to cause proper lung expansion.

PULMONARY TUBERCULOSIS

What is pulmonary tuberculosis?

A specific inflammatory disease of the lungs, caused by the bacillus tuberculosis, characterized anatomically by infiltration, caseation and ulceration of lung tissue, and clinically by loss of weight, exhaustion, fever and cough.

How is pulmonary tuberculosis most frequently communicated?

By direct or indirect contact with an infected individual through the agency of his bacillus-laden sputum.

What are the predisposing causes of pulmonary tuberculosis?

The predisposing causes of pulmonary tuberculosis are:

- (1) The inherited tendency or susceptibility toward infection.
- (2) Poor hygienic environment.
- (3) Occupations involving the breathing of impure air and dust.
- (4) Chronic catarrhal diseases of the respiratory tract.
- (5) Chronic alcoholism.
- (6) Certain diseases, as whooping-cough, measles, diabetes, etc.

What are the early symptoms of (pulmonary) tuberculosis?

A hacking cough, with or without pleural pain, a slight elevation of temperature, especially in the evening, a feeling of lassitude and progressive loss of weight, are early symptoms of pulmonary tuberculosis.

What opinion should a nurse give to a patient in regard to the care of tuberculosis?

She should emphasize the fact that no specific cure exists for the disease, but that it is easily curable in the earlier stages if the patient stays at rest, with plenty of fresh air, sunshine and abundant food, especially in regions free from dust.

Give the most effective way of disposing of sputum in a tuberculosis case.

The most effective method of disposing of tuberculous sputum is to have it received in waterproof paper sputum-cups which may be burned.

What two elements in nature are most efficient in the hygiene of pulmonary tuberculosis?

Fresh air and sunshine are the two elements of nature most efficient in the hygiene of the tuberculous.

Mention some important points to remember in giving the fresh-air treatment in cold weather.

That the patient is not in a draught, that he is well and warmly clad, and that the air though fresh is not too cold. The room may be heated, but not over 60° F.

State the most important point in nursing tuberculosis in regard to both patient and public.

In nursing pulmonary tuberculosis the most important point is to inculcate the lessons of personal hygiene, especially as regards the disinfection of sputum.

What are the most frequent sites of tuberculous infection in adults? In children?

Pulmonary tuberculosis is the form most frequently found in adults, while tuberculosis of the glands, bones and joints is more frequent in children.

In nursing a case of pulmonary tuberculosis what are the most important instructions to give: (a) To the family? (b) To the patient?

(a) The family should be impressed with the contagiousness of the disease and their help enlisted in enforcing partial or complete isolation of the patient, the use of the sputum-cup and destruction of sputum, sterilization of bed clothing, separate linen and dishes, avoidance of kissing, etc., as well as the necessity of fresh air, rest and good food for the sufferer.

(b) The patient should be instructed that rest, sleeping on a porch or near a window, day and night, and plenty of nourishing food are the most valuable aids in a cure. The danger of spitting and kissing, and the necessity for sputum disinfection should also be emphasized, and its technic explained.

TULAREMIA AND PSITTACOSIS

(a) What is tularemia? (b) Mention two ways in which it may be acquired. (c) Give three symptoms.

(a) Tularemia is a specific infectious disease, caused by the *bacterium tularense*, which is transmitted by rodents, such as the rabbit and ground squirrel, by the bite of insects of the type of lice, fleas, etc., or is even more readily acquired by the handling of infected animals.

(b) Through the bite of infected bedbugs, lice or fleas, or through handling infected animals—as skinning rabbits, etc.

(c) Three symptoms are a primary ulcer, enlarged lymph glands sometimes accompanied by suppuration, and a septic type of fever usually of three or more weeks' duration.

What is psittacosis?

Psittacosis is a disease transmitted by birds, especially parrots, to man, and characterized in humans by depression and weakness, a typhoid-like temperature, and evidence of severe general infection. Death frequently results, and the contagium is a filterable virus.

ACUTE POLIOMYELITIS AND EPIDEMIC MENINGITIS

Briefly outline the nursing care of poliomyelitis in the acute stage.

(a) Exercise contagious precautions, and isolate patient.

- (b) Wrap affected parts in cotton; support extremities, as the leg, with pillows and keep in a position of partial flexion.
- (c) If foot is dropped, support arch of foot.
- (d) Do not use manipulation or massage.
- (e) Give soft or liquid nourishment.
- (f) Use warm sponges if perspiration is marked.
- (g) Exercise usual precautions after spinal puncture.
- (h) Do not allow patient to be unnecessarily disturbed.

Give the full medical name of the disease which was epidemic in New York and other nearby states the summer of 1916, and give two leading reasons for the panicky fear which it caused.

Acute poliomyelitis or polio-encephalitis. Panicky fear was caused by lack of exact knowledge as to its mode of dissemination, prevention and cure, and by the extensive paralysis or high mortality caused by it.

How is epidemic meningitis acquired?

By contact with an active case, or a carrier harboring the virus.

SMALLPOX

By what method is smallpox transmitted to others, and how may this be prevented?

A specific parasite, believed to be a protozoan, is the cause of smallpox, and it is contained in the pustules and probably in all the body excretions. It is very tenacious of life and may be latent in clothes or fomites for a long period, and be transmitted by direct or indirect contact.

To prevent the transmission of this malady it is necessary to isolate the patient, preferably in a special hospital, disinfect all objects which have been in contact with him and vaccinate all who have been or are likely to be exposed to the contagion.

- (a) What prophylactic means are used against smallpox?
- (b) Who discovered vaccine and how is this serum obtained?
- (c) When should vaccination be done?

- (a) Vaccination is practiced against smallpox.
- (b) Edward Jenner, an English physician, used vaccination for the first time in 1798. Vaccine is the lymph taken from a

calf previously inoculated with vaccinia, with glycerine added to dilute and preserve it.

(c) Vaccination should be done in infancy.

How would you prepare the skin for vaccination?

The skin at the site chosen should be scrubbed with soap and water, and then with alcohol, and dried in the air.

Name one serious complication of smallpox.

Bronchopneumonia is a serious complication of smallpox.

COMPLICATIONS

Give complications that sometimes arise from diphtheria, measles, whooping-cough, scarlet fever.

In diphtheria—broncho-pneumonia, myocarditis, gastro-enteritis and mucous membrane hæmorrhages.

In measles—broncho-pneumonia, acute gastro-enteritis, laryngitis, otitis.

In whooping-cough—broncho-pneumonia, emphysema, epistaxis, chronic bronchitis.

In scarlet fever—nephritis, hyperpyrexia, endocarditis, otitis, broncho-pneumonia.

VENEREAL DISEASES

(a) Name the venereal diseases.

(b) Discuss the prophylaxis of venereal diseases in regard to the nurse in the discharge of her professional duties.

(a) The venereal diseases are syphilis, gonorrhœa and chancre.

(b) In the prophylaxis of venereal diseases, the nurse should wear gloves and a gown in administering local treatments to patients. In the general care, she should avoid contamination of her uniform and hands with discharges from the patient. The hands should be thoroughly disinfected after caring for the patient.

(a) What is syphilis? (b) Name the germ which produces it. (c) Give three stages.

(a) Syphilis is an infectious disease of long duration caused by a specific organism and characterized by the formation of a primary sore followed by lesions in the lymphatic glands, skin, connective tissues, bones, and sometimes the nervous system.

(b) Syphilis is produced by inoculation with the spirochæta *pallida*, also called the *treponema pallidum*.

(c) The primary stage appears as a hard, shotty chancre at the point of infection, with enlargement of adjacent glands.

The secondary stage is ushered in with slight fever, ulcers in the throat, blotches on the skin, loss of hair and muscular pains.

The tertiary stage, which occurs much later, is shown by granulomatous changes in the bones, arteries, viscera, and nervous system.

What are the symptoms, (a) of acquired syphilis; (b) of inherited syphilis?

(a) Acquired syphilis has 3 stages: (1) The primary stage, in which a small, hard lump appears at the point of infection usually in less than a week, which quickly ulcerates, leaving a not painful ulcer, with indurated edges and base—the chancre or primary sore. The glands, especially the inguinal, enlarge.

The secondary stage appears in 6 to 12 weeks after the appearance of the chancre. Its duration varies from a few weeks to a couple of years. It is marked by various skin eruptions, headache, slight fever, mucous patches on the membranes of the mouth, nose, anus or vulva, iritis, deafness, alopecia, etc.

The tertiary stage may be avoided by treatment, and is sometimes long delayed. Scab-forming and crusting skin eruptions and ulcerations are found. Gummata, or tumor masses, may appear in any part of the body. Periosteal inflammations and erosions of bones, especially of the face, are frequent. Erosion of the larynx and vocal cords and perforation of the hard or soft palate are common. Locomotor ataxia, paresis, syphilis of the brain and various psycho-neuroses may appear in the tertiary stage. Arterial degeneration and aneurisms, especially of the aorta, occur. The Wassermann test is positive in untreated syphilis in all stages.

(b) Inherited syphilis may be shown at birth in the macerated dead foetus, or the symptoms may appear immediately after birth, or be delayed for months. The skull shows prominent frontal bones, the anterior fontanelle is thickened. A papular, pustular, or erythematous rash is seen on the body, and the mucous membranes may show mucous patches. The child will have the snuffles, and may have ophthalmia, or a vaginal or rectal dis-

charge. A weazened, marantic, old-man appearance may be present. The Wassermann test is positive. The later sequelæ include epilepsy, idiocy, hydrocephalus, keratitis, iritis, deafness, gummata of the viscera, and bone diseases. The Hutchinson teeth, the upper central incisors being notched and peg-shaped, are often seen when the permanent teeth appear.

Why is it necessary for a nurse to be familiar with the symptoms of syphilis?

Because syphilis is a communicable disease and may be transmitted through the medium of towels, dishes, etc., used by infected individuals in the acute stage of the disease.

What is gonorrhœa, and where are the most common seats of infection?

Gonorrhœa is an acute, inflammatory and highly infectious local disease, sometimes with general constitutional symptoms, due to infection with the gonococcus, or diplococcus of Neisser. The disease may localize in any open wound, but it is found most frequently in the mucous membranes of the urethra, vagina, the eye, and contiguous tissues.

Pulse - is the expansion
the contraction of blood
in the arteries felt
against the fingers

Trachoma - highly contagious
granular conjunctivitis

SURGICAL NURSING

DEFINITIONS

Define: (a) trachelorrhaphy, (b) empyema, (c) strangulated hernia, (d) bursitis, (e) cholelithotomy.

(a) Trachelorrhaphy is an operation for the repair of tears in the cervix of the uterus.

(b) Empyema is a collection of pus in one of the closed cavities of the body; more especially a collection in the pleural cavity.

(c) A strangulated hernia is an irreducible hernia in which the sac and its contents are suffering trauma from pressure against the hernia openings.

(d) Bursitis is an inflammation of a bursa, and may be either traumatic or infective in origin.

(e) Cholelithotomy is the operation for incising and draining the gall-bladder for gall-stones.

Define concussion of the brain.

Concussion of the brain is a shaking up of the brain produced by direct or indirect violence which causes a disturbance in its functions proportionate to the degree of the injury. In mild cases the individual may become pale, dizzy and stagger and have a headache with faintness and rapid, small pulse. In more severe injury he lies with a rather slow pulse in a semi-stupor, from which he may be readily awakened. The symptoms may continue for several days, and usually recovery is complete.

Define surgery.

Surgery is the branch of medicine which deals with the operative treatment of disease, whether through the use of the knife or by manipulation.

Define peritonitis, tonsillitis, vaginitis.

Peritonitis is an inflammation of the peritoneum, acute or chronic.

Tonsillitis is an acute or chronic inflammation of the tonsil.

Vaginitis is an inflammation of the vagina, usually acute, but sometimes chronic.

Define phlebitis.

Phlebitis is an inflammation of a vein.

Define phagocytosis.

Phagocytosis is the name given to the property which leucocytes possess, of being able to take up and destroy bacteria by intracellular digestion.

Define osteomyelitis, septicæmia, laparotomy, lithotomy and cystocele.

Osteomyelitis is an inflammation of a bone including its marrow.

Septicæmia is an infection of the entire body through the presence of pathogenic organisms and their products in the blood stream.

Laparotomy is any operation in which the abdominal cavity is incised and opened.

Lithotomy is the operation for the removal of vesical calculus by cutting into the bladder.

Cystocele is a hernia of some portion of the urinary bladder into the lumen of the vagina.

What is aspiration and how is it done?

Aspiration is an operation in which normal or pathological fluid is removed from a cavity in the body. It is done by a process of sucking or siphoning the fluid through a fine needle or canula—as with a large hypodermic syringe, or by the use of a special exhaust pump attached to the needle with a bottle reservoir for the fluid, or by the use of the canula alone.

Define deodorant, disinfectant, detergent.

A deodorant is a substance which has the property of removing odors.

A disinfectant is a substance which will destroy bacteria—a bactericide.

A detergent is any substance which cleanses, especially if applied externally.

Define sinus, fistula, abscess.

A sinus is a cavity having a narrow opening, usually a suppurating tract communicating with diseased or broken-down tissue.

A fistula is a narrow, tubular cavity of pathological origin, lying between two organs, an organ and a free body surface, or between an abscess and a free surface or organ of the body.

An abscess is a circumscribed collection of pus in body tissue.

Define congenital deformity.

A congenital deformity is one that exists at the time the child is born.

Name three congenital deformities that are correctable by surgery.

Club foot, harelip, and webbed fingers are three congenital deformities, each one of which is correctable by a surgical operation.

Define pathology; prophylaxis.

Pathology is the science which deals with the causes and effects of disease in the body.

Prophylaxis means the methods employed to prevent disease.

What is varicocele?

Varicocele is a varicose condition of the veins of the pampiniform plexus.

What is a tourniquet?

A tourniquet is an instrument, usually a broad band of rubber or cloth, intended to stop the flow of blood from the large vessels by making circular elastic pressure when it is applied about a limb.

What is the danger of leaving a tourniquet on a great length of time?

Gangrene may result in an extremity when a tourniquet is applied for too great a length of time.

Name three surgical conditions in which the X-Ray and fluoroscope are frequently used.

The X-Ray and fluoroscope are valuable in surgery for (1) Diagnosis of location of foreign metallic bodies—as in gunshot

wounds; (2) Diagnosis of stone in the kidney and bladder; (3) Diagnosis of gastric and duodenal ulcer, after preparatory bismuth or barium sulphate meal.

What is a tumor? What is a benign tumor? What is a malignant tumor? Give an example of each.

A tumor is a swelling, but especially a new growth, which may be of a cystic or solid nature, and in its effect on the organism may be benign or malignant. Tumors, or new growths, in tissues are made up of masses of cells or tissues resembling normal structures, but arranged in an abnormal manner. New growths live and grow at the expense of the organism without serving any useful purpose.

A "benign," or innocent tumor, is one which grows rather slowly, has only a local effect, does not form metastases and does not produce rapid cachexia.

A "malignant" tumor is one which grows more or less rapidly, tends to ulcerate or break down, infiltrates contiguous tissues or produce metastases, induces cachexia, and causes death to the organism unless removed very early in its course. Fibroid tumors are benign; carcinomata, or cancers, are malignant.

What is a surgical form of torticollis? What is its treatment?

A surgical form of torticollis, or wry neck, is the congenital form in which one or more of the muscles and tendons of the neck on one side are short, or are improperly developed in some other way. The treatment is early division of the muscle, and placing of the head and neck in a plaster cast or in a special splint in a position of overcorrection.

What is callus?

Callus is the mass of temporary exudate and soft fibrous and vascular tissue with which nature encases the bone in the region of a fracture during the process of its repair.

What is fissure of the anus?

A cleft-like and very painful ulceration at the margin of the anus.

Mention three varieties of inflammatory diseases of bone.

Acute osteomyelitis.

Tuberculous osteomyelitis.

Syphilitic osteomyelitis.

Who discovered the following: (a) radium, (b) antiseptis, (c) the germ theory of disease, (d) smallpox vaccination, (e) ether anæsthesia?

(a) Radium was discovered by Madame Curie.

(b) Antiseptis was made possible by Pasteur's discoveries and was first applied surgically by Lord Lister.

(c) The germ theory of disease was discovered by Louis Pasteur.

(d) Smallpox vaccination was discovered and first utilized by Edward Jenner.

(e) Ether anæsthesia was first used by Crawford Long (1839) but because of a failure to publish his discovery W. T. C. Morton who reported the use of the anæsthetic in 1846 and described his technic was given priority.

Define lumbar puncture, infusion.

Lumbar puncture is the operation for draining away fluid from the spinal canal, by means of puncture with a suitable needle or canula.

Infusion, meaning "to pour into," is a word sometimes used to describe the process of giving isotonic saline solution under the skin or by the intravenous route.

Define proctoclysis.

Proctoclysis is the washing of the rectum with saline or medicated solution.

Define wound, scar, incision, excision.

A wound is any lesion of the body caused by external violence; in the more restricted sense, an injury or division of soft parts by violence.

A scar is the visible mass of cicatricial tissue, formed as the result of a healed wound.

Incision is the act of cutting and dividing something with a sharp instrument.

Excision is the act of removing or cutting out anything from the body.

Define asphyxia, necrosis.

Asphyxia is a condition of collapse and suspended animation caused by the cutting off of the body's normal supply of oxygen.

Necrosis is a term used to describe the local death of a tissue or tissues.

Define trephine, phlebotomy.

To trephine is to perform an operation in which the bony skull is opened and the cerebral membranes exposed. A rounded, saw-toothed instrument once used for this purpose was also called a trephine.

Phlebotomy is the incision of a vein. It is used to designate the procedure of letting blood, or bleeding, as a therapeutic measure.

Define thoracotomy, prostatectomy, gastro-enterostomy.

Thoracotomy—incision of the thorax, usually the removal of part of a rib.

Prostatectomy—the surgical removal of the prostate gland.

Gastro-enterostomy: an operation which involves the suturing of an opening made in the small intestine to an opening made in the stomach.

Define gangrene, cicatrix, granulation, thrombus, embolus, anastomosis.

Gangrene is complete cellular death of a portion of the body. Two clinical forms are described, dry and moist.

A cicatrix is a scar; the newly regenerated tissue filling up the space caused by a wound in some soft tissue of the body.

Granulation is a reparative process in which the body tissues heal open wounds by luxuriantly proliferating masses of connective tissue and blood-vessels.

A thrombus is the clot formed when a blood-vessel becomes clogged by the clotting of blood within it.

An embolus is a clot or any non-soluble material which has been transported by the blood stream and now blocks the vessel lumen.

Anastomosis is the connection of the branches of another blood-vessel of the same kind—as vein with vein, artery with

artery. In surgery the term is applied to the operation for uniting by suture severed portions of the intestines or stomach.

Define the spermatic cord.

The spermatic cord is a cord-like structure beginning at the internal abdominal ring passing through the inguinal canal and ending at the scrotum where its component parts—the vas deferens, the spermatic and other arteries and veins and lymphatics—are distributed. It is found only in the male.

Define: (a) crepitus, (b) hyperalgia.

(a) Crepitus is a sound like that made by rubbing the hair between the fingers, or the sound made by rubbing together the ends of a fractured bone or dry synovial surfaces.

(b) Hyperalgia is over-sensitiveness to painful sensations.

Define: (a) dehydration, (b) tympany, (c) pyrexia, (d) singulus.

(a) Dehydration is removal of water from a substance, compound or tissue.

(b) Tympany is a bell-like percussion note heard over air-containing cavities or organs, such as intestines distended with air or gas.

(c) Pyrexia is fever or abnormal rise of body temperature.

(d) Singulus is a quick inspiration caused by spasm of the diaphragm and interrupted by closure of the glottis—commonly the hiccough.

Give commonly used terms for (a) renal calculi, (b) nephrotosis.

(a) Renal calculi are kidney stones.

(b) Nephrotosis is a prolapsed or floating kidney.

Explain the meaning of the following prefixes: (a) contra, (b) dys, (c) hyper, (d) hypo, (e) inter, (f) sub.

(a) Contra means against or opposite to.

(b) Dys means difficult or painful.

(c) Hyper means over or above.

(d) Hypo means under or beneath.

(e) Inter means between or among.

(f) Sub means under.

Define phimosis and paraphimosis.

Phimosis is a congenital or acquired narrowing of the opening of the prepuce so that it cannot be retracted.

Paraphimosis is strangulation of the glans penis by a retracted prepuce.

What is an hæmatocele?

An hæmatocele is an effusion containing free blood in one of the natural body cavities.

What is hydrocele?

Hydrocele is a collection of clear fluid in the tunica vaginalis, testis or in nearby structures, as the spermatic cord, or the canal of Nuck.

When are hemorrhoids internal and when external?

Hemorrhoids are internal when they are well within the sphincter muscle of the anus; external when they are outside the sphincter muscle.

What is a hernia? Name three common varieties.

A hernia is a pouched protrusion of tissue in an abnormal location. A common location is in the abdomen and scrotum, the hernia being formed by intestine or peritoneum, or both, enclosed in a sac of peritoneum. Examples are *umbilical hernia*, passing through the umbilical ring; *inguinal hernia* passing through the inguinal canal; *femoral hernia*, passing through the femoral opening.

(a) What is a differential blood count? (b) In a surgical case what does an increase in leucocytes indicate?

(a) A differential blood count is the method used to determine the percentage of the various forms of white blood cells in the blood.

(b) An increase of leucocytes in a surgical case indicates the presence of infection somewhere in the body.

ASEPSIS—ANTISEPSIS—DISINFECTANTS— ANTISEPTICS—STERILIZATION

On what two principles is modern surgery based?

Modern surgery is based upon the principles of asepsis and antiseptis.

Differentiate between aseptic and antiseptic surgery.

Aseptic surgery is surgery performed under conditions which are intended to have everything that comes in contact with the wounded surface sterilized and therefore free from bacteria.

Antiseptic surgery is surgery performed under conditions which, by the presence of bactericidal substances on the instruments, hands of operator and assistants and everything coming in contact with the wound, are expected to prevent bacterial growth in the wound and consequent infection.

Define sepsis, asepsis and antiseptic.

Sepsis is the condition of being infected with living pathogenic organisms.

Asepsis is the condition of being free from the presence of living pathogenic organisms—referring especially to the operative field and operative technic.

An antiseptic is any substance capable of preventing the multiplication of pathogenic organisms; or any technical measures undertaken with that purpose in view.

What did Lister discover?**What did Koch discover?**

To Lister the basic principles of antiseptic surgery are due.

Koch discovered the germs or organisms causing tuberculosis, anthrax and cholera.

Who was Lister?

Joseph Lister (Lord Lister) was a great English surgeon, born in 1827, who first applied Pasteur's discovery of the germ cause of disease to the prevention of surgical infection during and after surgical operation. He founded the school of "antiseptic" surgery in which it was attempted to sterilize, by chemical antiseptics, the wound and all articles which came in contact with it, including the air of the operating room. This was followed by the more modern technic of "asepsis" in the operating room.

Name six antiseptics, the strength in which each is most generally used, and for what purpose.

Carbolic acid, 5 per cent., for disinfection of excreta.

Bichloride of mercury, 1 to 1000 to 5000, hand and wound disinfection.

Tincture of iodine, full to half strength, painted on the skin as preoperative preparation, in connection with solution of bichloride of mercury in skin disinfection, etc.

Alcohol, 70 per cent. solution.

Boric acid, saturated solution, in disinfecting mucous membranes.

Peroxide of hydrogen, normal strength, to cleanse infected wounds.

Mention some breaks in asepsis that a nurse may make when preparing dressings or dressing a wound.

In preparing dressings a nurse may vitiate technic by not properly managing the autoclave, not opening the proper valves, etc.; not having the proper steam pressure and therefore the proper temperature (33 lbs.—135° C.) or not maintaining it long enough. In opening packages of sterile dressings she may touch the contents with infected hands, vitiated by handling the wrappings, or she may place them on a non-sterile towel or table. In dressing a wound, infection by the nurse's hand, or by other contact, is the most common form. Handling dressings only with sterile forceps, one in each hand, will prevent this.

What do you understand by aseptic technic?

Aseptic technic in surgery is the practice and development of a system through which neither the surgeon nor his assistants will in any way allow bacteria to come in contact with the field of operation or the wound during the performance of or after an operation.

What is meant by surgical cleanliness?

By surgical cleanliness is meant a super-cleanliness which not only removes visible dirt, but also the bacteria not visible to the naked eye. Surgical cleanliness implies this condition not only in the surgically affected area, but also in everything which comes into contact with that area.

In what branch of her work is a nurse's relation to bacteriology most emphasized?

In surgery and surgical nursing.

Describe two methods of hand disinfection.

Materials: A sterile scrub brush, orange stick, green soap, a sink with running water controlled by foot pedals.

Solutions: A basin of alcohol; a basin of solution of bichloride of mercury, 1-1000; a basin of sterile water. If (b) method is to be used, omit the solution of bichloride of mercury and alcohol, and use instead a basin of Harrington's solution.

(a) The nails trimmed short are cleaned with the orange stick. The hands and forearms are scrubbed with green soap and water for 5 minutes by the clock, well rinsed, dipped in alcohol for a minute and in bichloride of mercury solution for 2 minutes, then rinsed in sterile water.

(b) After scrubbing and rinsing, dip the forearms and hands in Harrington's solution for 2 minutes and rinse in sterile water.

Name four disinfectants.

Disinfectants: Chlorine, slaked lime, formaldehyde gas, sulphur dioxide.

What do we mean by sterilization?

Sterilization means the destruction of living organisms, especially of a pathogenic type, in order to make a material sterile or free from infection.

What is the best method and how would you sterilize rubber gloves?

Rubber gloves are best sterilized in the autoclave. Clean, dry and powder used gloves, wrap in cotton covers, and sterilize with the dressings for 10 or 15 minutes at 15 pounds.

Why are rubber gloves used in all surgical work?

Because it is recognized that the entrance of bacteria into wounds occurs practically always by contact with material things to which these organisms adhere—hands, instruments, dressings, etc. As it is impossible to absolutely sterilize the hands by chemicals, it is considered advisable to use rubber gloves sterilized by heat as a hand covering.

Why is bichloride of mercury undesirable as a disinfectant for instruments and raw areas?

Because of its corrosive action on metals, and its irritating action on unprotected surfaces.

Mention four disinfectant solutions in general use for cleansing hands previous to operation.

Alcohol, 50 to 80 per cent.

Bichloride of mercury, 1 to 1000.

Iodine, 1 to 2000.

Harrington's solution.

Name and give strength of three antiseptic solutions used in surgery.

Solution of bichloride of mercury, 1-1000.

Solution of carbolic acid, 1 to 20.

Solution of formaldehyde, 1-100.

Name two solutions commonly used for preparing the bladder.

Nitrate silver—1-10,000 to 1-1000.

Boric acid, saturated solution.

(a) Name four methods of sterilization. (b) What do you understand by fractional sterilization?

(a) 1. Sterilization by steam.

2. Sterilization by boiling.

3. Sterilization by dry heat.

4. Sterilization by chemical solutions.

(b) By fractional sterilization is meant sterilization of articles in original packages for a certain period, usually about 20 minutes when superheated steam is employed, on successive or alternate days. It is usually applied to fluids that cannot stand the high autoclave temperature, and the latent period is intended to allow the development of spores into bacteria.

How would you sterilize silkworm-gut and silk sutures?

Silkworm-gut and silk sutures are sterilized by boiling for 10 minutes.

How would you sterilize scissors, dressing forceps, scalpels and needles?

These instruments are sterilized by boiling in the instrument sterilizer for 10 minutes.

Scissors and forceps should be opened, needles should be stuck into a piece of cloth, and scalpels should have their blades protected by winding them with cotton. As the edge of cutting

instruments is injured by boiling, some surgeons prefer to have knives and scissors boiled only 5 minutes after use and 3 minutes before use.

How are dressings best sterilized?

By method of the autoclave with superheated moist steam, for a period of 20 minutes at a temperature of 100° to 135° C.

How are basins, pitchers, etc., sterilized?

By boiling for 15 minutes.

BANDAGES AND DRESSINGS

Name five purposes for which bandages are used.

Support; to apply pressure; to retain splints; to retain dressings; and to retain medicated applications in their place.

In applying bandages what should a nurse be mindful of?

The comfort of the patient is of first importance. The nurse should not bandage too tightly, should pad all bony prominences, and not approximate two skin surfaces, as the arm and axillary space, without using a pad.

Name the varieties of turns used in bandaging with a roller bandage from toes to knee.

Circular turns about the foot near the toes, then figure of "8," over the dorsum to the ankle and back again, with another figure of "8" about the heel; circular and spiral turns over lower part of the leg; spiral-reverse turns over the calf, and simple circular turns below the knee.

Define the spiral-reverse bandage and name a case in which it is used.

The spiral-reverse bandage is a spiral bandage with a reverse turn, made about the centre of the limb to be bandaged. The bandage is reversed, or turned over, making a diagonal fold across its width, so that what was the outer surface, away from the skin, now becomes the inner surface towards the skin, and the course of the bandage takes a new direction. It is used when there is variation in the diameter of the part to be bandaged, as in the calf of the leg.

(a) Give method of applying hot wet dressings. (b) Why are they used?

(a) A method to apply hot wet dressings is to thoroughly cleanse the area, then apply several layers of sterile gauze well moistened with the solution which has been ordered, usually solutions of saline or magnesium sulphate or boric acid. A protecting dressing of rubber tissue or oil silk is applied to hold the dressings in place, to prevent evaporation and to avoid soiling the bed. A hot water bag may be placed against the dressing to maintain the heat.

(b) Wet dressings are used because moist gauze, by softening the tissues, brings bacteria to the surface where they can be acted upon by a disinfectant and because the capillary attraction of the gauze favors drainage.

Name two purposes for which adhesive strapping is employed and give examples.

(a) To hold dressings in place, as after an operation.

(b) To restrain the movements of the chest in dry pleurisy, or of the muscles of the back in lumbago.

Explain what is meant by reinforcing a dressing and explain why this should be necessary.

Reinforcing a dressing consists in adding additional gauze or bandage to that already applied. It is often necessary when there is excessive oozing of blood, serum, or pus, through dressings, thus rendering them pervious to bacteria, also when the original dressing has become loosened and there is danger of exposure of the wound or adjacent skin.

How could you tell that a plaster cast of the arm had been applied too tightly?

By pain and swelling in the arm and hand and dusky hue of the swollen fingers.

Mention two precautions to be observed when removing dressings from a wound.

First, do not remove any inner gauze with the hands. Use instead two sterile forceps or hæmostats with which to handle dressings. In this technic the nurse's hands will not be contaminated.

Second, if dressings are dry and require moistening, wring

out sponges in the antiseptic solution and apply them, handling them only with the forceps and never with the hands. When the dressings are softened, remove them gently with the forceps.

Give a list of articles necessary for doing a dressing of an abdominal wound with drainage.

Three sterile towels.

A package of sterile gauze sponges.

A package of sterile gauze pads or "fluffs."

A dressing set of sterile instruments in a sterile tray:

1 tissue forceps,

2 hæmostats,

1 long hæmostat,

1 scissors.

A bottle of sterile cigarette drains.

A bottle of sterile tube drains.

A pan of bichloride of mercury solution—1 to 1000, or other antiseptic.

A clean abdominal binder.

Adhesive plaster strips, 2 inches wide.

A pus basin.

Is there any difference in the technic necessary for a nurse in preparing her hands to do a surgical dressing and after treating an infectious patient?

No; practically none.

What is a scultetus binder?

A scultetus binder is a wide bandage, the ends of which are cut in strips, and so applied that these ends overlap in shingle fashion. It is so called from the Latin name of Schultz, a German surgeon of the late 16th century.

INSTRUMENTS

Why is it more difficult to clean surgical instruments that have been washed off in very hot water instead of cold water?

Because the very hot water coagulates the blood on these instruments.

Give the uses of the following instruments: hæmostat, retractor, curette, scalpel, volsellum, forceps.

A hæmostat is a clamping forceps with which the surgeon catches and closes bleeding vessels.

A retractor is a flat piece of metal bent at right angle and fitted with a handle for the purpose of making traction on tissues and withdrawing them from the operative field.

A curette is a small cup or pendant-shaped instrument, usually of metal, fitted with a long handle and used for the purpose of scraping away diseased tissue.

A scalpel is a small knife to make incisions and dissect tissues.

A volsellum is a long forceps with several opposed heavy teeth, used for grasping and holding portions of tissue or organs.

Forceps, when used without a qualifying adjective, is generally meant to mean obstetrical forceps, used to grasp the child's head and make traction when the muscular action of the mother has proven inefficient, or when for other reasons prompt delivery is imperative.

After an operation how would you clean and sterilize the instruments in order to have them ready for use again?

After counting them, rinse them in cold water and sterilize them by boiling for 10 minutes. Scrub them with a cork and fine pumice-soap or powder and assemble any detached parts after drying carefully. Then place them in the instrument case, properly grouped.

Give the use of the following instruments: (a) trocar, (b) uterine sound.

(a) A trocar is an instrument used in the operation of tapping or paracentesis.

(b) A uterine sound is a long, curved, blunt instrument used for introduction through the vagina into the uterus for the purpose of exploring its cavity.

SUTURES

What are the most common sutures used?

Silk, catgut, chromic catgut, silkworm gut, Pagenstecher's linen, and kangaroo tendon, are the best most commonly used sutures.

What is a continuous suture?

A continuous suture is one which passes through the tissues in a series of uninterrupted stitches, being tied and knotted only at the beginning and end of the suture.

What is an interrupted suture?

An interrupted suture is one in which each stitch that passes through the tissues is knotted separately.

Name five kinds of suture materials and give uses of each.

Absorbable: Catgut, for buried sutures and ligatures of small arteries. Kangaroo tendon, for buried sutures.

Non-absorbable: Silkworm-gut, for superficial and tension sutures. Silk, for superficial and buried sutures and ligatures. Pagenstecher's linen, same as silk.

What is the purpose in chromicizing catgut?

Catgut is chromicized by treating it with a solution either of potassium bichromate, or of chromic acid, in order that it may be absorbed more slowly than ordinary or plain catgut when placed in living tissues.

ANÆSTHESIA

(a) What are the essential things for the administration of an anæsthetic? (b) How would you care for the metal inhaler before and after use?

The essential things for the administration of an anæsthetic are the anæsthetic itself (ether, chloroform, nitrous-oxide, ethyl-chloride), a suitable inhaler, or, in the case of nitrous-oxide, a special apparatus, and a supply of small towels or napkins. In addition, the stand for the anæsthetist usually contains a mouth gag, tongue forceps, gutta-percha tissue to protect the eyes, vaseline, sterile salt solution, and sterile olive or castor oil in small dropper bottles, a few Kelly curved clamps, and small gauze sponges, a sterile hypodermic syringe with ampoules of strychnia sulphate, adrenalin, nitroglycerine, pituitrin, caffeine-sodium-benzoate, morphine and camphorated oil in suitable doses.

Metal inhalers, before using, should be boiled for 5 minutes and covered with toweling, stockinette or several layers of gauze. After use the soiled covering should be removed, it should be washed in soap and water and again boiled for 5 minutes.

What special care should a nurse give a patient under a general anæsthetic?

The care should begin in the ward or room before the patient leaves for the operating room, to safeguard against chilling.

Proper clothing and sufficient blankets for this purpose should be furnished, and when the patient is placed on the table she should be properly covered, and the temperature of room not less than 75° F. A soft pad should be placed under the back over the sharp edge of the table to avoid pressure injuries, or perhaps nerve paralysis.

After the operation, any wet places are wiped dry, wet clothing removed, and dry, warm clothing substituted, and the patient, wrapped in an ample number of warm blankets, is returned to her bed.

Once here, the nurse must be especially attentive to watch the temperature of the room, to keep respiration clear by supporting the jaw when needed, to assist the patient to empty the mouth of vomitus, and so prevent the inspiration of vomited material which may occur during the reactive period. This is important, as many so-called ether pneumonias are due to inspiration of vomitus. The patient should not be left alone until fully conscious; and evidences of shock as shown by the pulse should be looked for and placed on the record.

What is the general preparation of a patient for anæsthesia?

The patient is placed upon a restricted, or a liquid, diet for 24 hours before the hour of operation, with a little water only during the first half of the last eight hours. Ten or twelve hours before the operation she receives a suitable purgative (castor oil, salts or cascara) and two hours before operation an enema of soap suds. The hair is plaited, if long, and covered with a towel; a simple gown, split up the back, is put on, and anything loose in the mouth, as false teeth, gum, etc., is removed before the anæsthesia is begun.

What simple measures would you resort to to stop vomiting after anæsthesia?

Give no water for three hours, supplying the liquid deficiency by administering salt solution by rectum. When actual vomiting has ceased, give water either very hot or very cold in tablespoonful doses, every 15 minutes, increasing the quantity and lengthening the interval as the tolerance of the stomach is restored.

For persistent vomiting, stomach lavage with solution of bicarbonate of soda 2 per cent. is sometimes beneficial.

Mention some important points in the care of a patient recovering from ether.

(1) Do not leave the patient at this time, as asphyxia or aspiration pneumonia may develop from inspiration of vomitus.

(2) Watch the patient carefully, keeping a record of the respiration, pulse, color and other clinical aspects.

(3) Have a pus basin ready to catch vomitus, and turn the patient's head and shoulders toward the basin when vomiting occurs.

(4) Do not give water while active nausea is present.

How would you prepare a patient for ether at short notice?

Give patient an enema, undress him, put on a loose night garment and tie up his head in a towel, removing all foreign bodies from the mouth before sending him to the operating room. Give nothing by mouth at this time.

Describe the difference between local and general anæsthesia, and give an example of each.

Local anæsthesia is the form of anæsthesia produced by injecting a solution of a locally anæsthetic drug into the tissues or into a nerve trunk, or by freezing, or any process which will destroy sensation in a strictly localized area of the body, and not affect general consciousness, as for example the injection of cocaine solution.

General anæsthesia is the form of anæsthesia produced by inhaling or injecting into the tissues or veins or swallowing a generally anæsthetic drug which, by acting on the brain and central nervous system, prevents the proper registration of painful impulses and destroys consciousness, as the inhalation of ether or nitrous-oxide.

What disagreeable sensation may be experienced by patients before the stage of surgical anæsthesia is attained, and what should be done to overcome them?

A feeling of terror, held previously in abeyance by will power, may develop in the early stages of inhalation anæsthesia with ether or chloroform, and rarely with nitrous oxide. The avoidance of sights and sounds calculated to frighten the patient, and a tactful and reassuring manner of the attending nurses and the anæsthetist

will help to overcome this tendency. A feeling of suffocation, or violent laryngeal irritation characterized by coughing due to premature concentration of the ether or chloroform vapor may occur before surgical anæsthesia is approached. Great care to concentrate the vapor very gradually will avert this discomfort to a great extent.

Why is it important to have stomach, bowels and bladder emptied before administering ether?

The bladder should be emptied because ether has an irritant diuretic action on the kidneys, and bladder-distension may result. The stomach and bowels should be emptied because of the tendency toward nausea produced by ether which will be aggravated by food in the alimentary tract.

What should be done in collapse from ether or chloroform anæsthesia?

In collapse from ether or chloroform (1) lower the patient's head and chest, (2) give artificial respiration, being sure that the tongue is well out of the pharynx and the air-way clear; (3) give sol.-adrenalin m.xx. caffeine-sodium benzoate, g. ii, or strychnine sulphate gr. 1/20 by hypodermic injection deep in the buttock.

If you were giving ether or chloroform, what observations would you make?

(a) Swallowing, voluntary movements, rigidity of jaw, vomiting, indicative of insufficient anæsthesia.

(b) Color of skin, lips, nails, to guard against insufficient air-way or central respiratory depression; respiratory rhythm, rate, and relation of inspiration to expiration, to determine the degree of anæsthesia attained.

(c) Sudden paleness (chloroform) or blueness (ether), indicating cardio-vascular paralysis in the former, or insufficient oxygenation, or asphyxia, in the latter.

(d) The pulse rate, whether very slow (chloroform—beginning heart-muscle paralysis), weak pulse coming later; or rapid and low tension (ether or chloroform when shock is impending or present).

What causes a patient to "swallow his tongue" while under an anæsthetic? What nursing measures may be used to prevent this condition?

A patient "swallows his tongue" while under a general anæ-

thetic because of the relaxation of the muscles of the jaw and tongue which permits the organ to fall back into the pharynx.

Nursing measures to prevent this consist in holding the jaw forward by pressure at the angle of the mandible.

OPERATION

Explain the following terms in relation to operations:

(a) Radical, (b) capital, (c) palliative, (d) exploratory, (e) plastic.

(a) A radical operation is an operation which aims to extirpate the disease completely.

(b) A capital operation is one which involves a risk of life or major operation.

(c) A palliative operation is one which aims merely to relieve symptoms.

(d) Exploratory operation is one which is performed for the purpose of examination.

(e) Plastic operation is one by which the shape of a part or the character of its covering is altered by transplantation.

In preparing a room for operation in a private house, state what substitutes you would use for:

(a) Dressing sterilizer, (b) operating table, (c) Kelly pad, (d) hot and cold water sterilizers, (e) irrigator?

(a) Dressing sterilizer, a wash boiler.

(b) Operating table, a kitchen table.

(c) Rubber sheeting, rolled around a paper core at one end and then bent round to form the pad, while the rest of the sheeting forms the apron.

(d) Hot and cold water sterilizers, 2 kettles of water—one having stood for some time, the other recently boiled.

(e) Irrigator, a sterile fountain syringe.

How would you prepare a patient for a mastoid operation?

Give the ordinary general preparation, and in addition cut the hair and shave the head for a radius of 3 inches from the hair line. Prepare this with the soap and water-, alcohol-, ether-, bi-chloride sequence, or by the tincture of iodine method.

Give one method of preparing the skin for an incision.

Shave the skin the night before the operation, or if that is not possible, shave it without water and then paint it with equal parts of alcohol and tincture of iodine.

What two points should be especially considered in placing a patient on the operating table?

- (1) The proper exposure of the field of operation.
- (2) The least possible discomfort to the patient.

Give name, composition and method of application of preparation which is used extensively for sterilizing the field of operation.

For sterilizing the field of operation a diluted tincture of iodine is extensively used. It is a 7 per cent. solution of iodine in alcohol, mixed with an equal quantity of alcohol. It is painted on the dry skin, no water or soap having been used on the part for the previous twelve hours.

If sent to a house in the country to prepare for an emergency capital operation, would you take down curtains, portieres, pictures, etc.?

Yes, but if the time is limited this should be omitted.

How should the nurse's hands be prepared for a surgical dressing?

If the hands are to touch the wound or dressings they should be prepared as for an operation, and gloves worn. It is much better to remove outer dressings and bandages and open dressings with the hands, and use sterile forceps or hæmostats to touch sterile dressings and the sterile area.

Give the general preparation of an operating room in a private house.

The room should be well lighted, preferably with a northern exposure. All hangings, draperies, pictures, rugs, etc., should be removed the day before the operation; the walls and floors carefully cleaned (preferably wiped with a cloth wet with 1-1000 solution mercuric chloride) and superfluous articles of furniture removed from the room. A narrow kitchen table may be needed for an operating table and a smaller table for utensils, solution basins,

etc., should be provided. A chair should be provided for the anæsthetist, and newspapers, oilcloth, etc., to protect the floor.

(a) At what temperature should the operating room be during an operation? (b) Why?

(a) 80° F.

(b) Because of the lowered vitality of the patient during an operation.

Give some of the necessary precautions to be taken just before the patient goes on the operating table.

To fasten a towel about the patient's head, remove false teeth or other loose articles from the mouth, see that the patient has voided and that the bowels are fully evacuated, especially if an enema has been given, and have ordinary clothes removed and suitable loose clothes worn.

What preoperative care is essential for a hyper-thyroid patient?

The preoperative care of a hyper-thyroid patient includes the following:

1. Absolute bed rest.
2. Mental rest. Quiet, cheerful room away from stimulating environment and away from friends.
3. Food should be plentiful and nutritious.
4. Lugol's solution as ordered by physician.
5. Previous to operation the neck should be shaven, scrubbed with green soap and water, then washed with alcohol and ether and a sterile towel applied.
6. The nurse should gain the confidence of the patient and do her utmost to reassure her and allay her fears.

Why is it of special importance that the bladder be emptied before abdominal section?

Because if the bladder is distended it may rise out of the pelvic cavity and be incised through the peritoneum by the operator's scalpel.

Why should urine be examined before and after operation?

Urine should be examined before operation to determine the condition of the kidney structure, before subjecting the patient

to the anæsthetic and operative strain. After operation, to determine the amount of kidney trauma caused by the operation and anæsthesia.

Mention three features to be sought for in selecting an article of furniture to be used as an operating table in the home.

- (1) It should be not too short, nor too wide.
- (2) It should be high enough.
- (3) It should be strong enough.

Why is Fowler's position sometimes ordered?

This, the semi-sitting position, is sometimes ordered in surgical diseases involving the peritoneum, in order to relieve strain on the abdominal muscles, favor localization of the inflammation and drainage, and keep infectious material away from the region of the diaphragm.

How may the Trendelenburg position be secured without an operating table of special design in a private house?

By inverting a chair so that the anterior aspect of the seat and the back touch the floor of the improvised table.

Give the instruments you would prepare for appendectomy.

Two knives.

One pair each of straight and curved scissors.

One pair of retractors.

Four towel clips.

One dozen small artery clamps.

One half dozen large curved hæmostats.

One plain and one mouse-tooth forceps.

One needle holder and sutures.

Several skin, fascia and intestinal needles.

Give method of counting abdominal sponges.

Sponges are given to the clean nurse in packets of a known number, ten or twenty usually. On receiving the sponges the clean nurse counts them twice. After the sponges are used and discarded the unsterile nurse places them on one side and recounts them. Before the cavity is closed, the two counts are taken and compared, to insure no sponges are left in the cavity.

POST-OPERATIVE NURSING MEASURES

Give some points in the post-operative care of laparotomy patients.

Position in bed: The position of the patient in bed has a great influence on his comfort. Two simple aids—a pillow under the knees and turning the patient on his side—will add much to his comfort.

“The feeling that a patient must lie flat on the back for an indefinite length of time has long passed into disuse.” (Parker and Breckinridge.)

Water: Either small quantities of water frequently repeated, or practically no water, supplying the fluid needs with normal salt solution by rectum, are the courses advised for the first 8 hours following operation.

Nourishment: Small quantities of liquid nourishment, such as albumen water, liquid peptonoids or broth are given (excepting following certain stomach operations) after about 8 hours, if the vomiting and nausea have subsided sufficiently. Milk is usually not well borne at first.

Bladder function: The advice of the attending surgeon should be secured as to whether or not catheterization should be done. Usually it may be deferred for 12 hours, if the bladder does not empty normally. The sound of running water, pouring hot water on the pubes, or the administration of an enema may promote spontaneous urination.

Bowel function: It is customary to empty the intestines by enemata after 24 hours or more following operation. The routine of the surgeon or his special directions should be followed. Distention or unusual pain should be noted and advice secured as to the use of the enema or rectal tube.

Pain: The effect of opiates in inhibiting peristalsis renders many surgeons chary of them. They may only be given on prescription of the attending surgeon.

Dressings and convalescence: The time for dressings and for sitting up must be determined by the surgeon. The periods for sitting up must be gradually brought about first by sitting in bed for short periods, then in a chair. The maximum period for sitting up outside a bed at first should be half an hour.

General care and observation: An exact temperature chart and record should be kept of the patient's condition during the

days succeeding operation. Notes should be exact, especially those relating to drainage, bladder and bowel function, vomiting and other objective symptoms.

(a) What would you do to relieve gas pains? (b) Would you consider progressively increasing flatulence a serious condition?

(a) To relieve gas pains high purgative enemata containing carminatives, such as turpentine, and counter-irritation to the abdomen by means of turpentine stupes, are useful. The frequent insertion of the rectal tube alone will sometimes give relief.

(b) Progressively increasing flatulence is a serious condition: first, because dilatation of the stomach and intestines may seriously interfere with the respiration by pressure on the diaphragm, and overtax the heart, in such diseases as typhoid fever and pneumonia; second, because a paralysis of the intestine or intestinal obstruction may be ushered in by this symptom in inflammatory diseases involving the peritoneum and in other conditions which favor intestinal obstruction.

After any operation, how long would you let a patient go without voiding urine before reporting it?

The nature of the operation influences the importance of emptying the bladder. After certain operations upon the pelvic organs, or tissues adjacent to the bladder, as perineorrhaphy, it is desired by some operators to have the bladder emptied frequently. After ordinary laparotomy, it is believed that the bladder may go 8 hours without emptying, especially if the fluid intake is small. Failure to urinate inside of 6 hours, however, should be recorded in any case, and reported, unless contrary orders have been given by the operator.

What symptoms would suggest urinary retention?

A more or less continuous dripping of urine in small quantities, alternating with voiding of small or reasonable quantities of urine. If the patient voids, and urine is then shown by the use of the catheter to have remained in the bladder, retention is present.

Name five methods used to induce a patient to void urine after an operation.

1. Urge patient to drink large amounts of hot fluids.
2. Place on a warm bed pan from which steam is rising.

3. Pour warm water over genitals.
4. Place hot water bag or hot towels over bladder region.
5. Have the patient hear the sound of running water while attempting to void.

Explain why we elevate the head of the bed in some cases and the foot in others.

The head of the bed is elevated in cases where the effect of gravitation in pelvic and abdominal drainage is desired, and frequently after gastro-enterostomy operations in order to prevent the wound from being at a low point of gravity in the stomach. The foot of the bed is raised in shock and hæmorrhage to facilitate the return of venous blood to the heart and raise blood-pressure, and sometimes after operations in the pelvis to prevent mesenteric adhesions.

(a) When you insert the rectal tube what must you do to protect the bed? (b) Why?

(a) When you insert the rectal tube you should place a piece of rubber sheeting under the patient, and place the patient on the bed-pan.

(b) Because the insertion of the tube may lead to a discharge of fæcal matter.

Name two causes of discomfort to a patient after abdominal operation.

Nausea and vomiting and gastro-intestinal flatulence.

After an operation, what are the indications that a patient is being dehydrated? What methods may be used to supply the necessary fluid?

When nausea and vomiting continue for some time, and the patient complains of unusual thirst, with dry, hot skin, cracked or dry lips, dry, red tongue, rapid pulse and a pinched expression, dehydration may be diagnosed.

The necessary fluid may be supplied by giving physiological salt solution by rectum or by hypodermoclysis.

What is Volkmann's contracture? What causes it?

Volkmann's contracture is a serious atrophy of the nerves and muscles of the forearm, which results in permanent contractions and paralysis of the hand of the affected side. It is caused

by pressure on the blood vessels and the nerves of the arm and forearm when a bandage or plaster cast is applied too tightly.

Name some conditions which may lead to a rise of temperature following an operation.

Absorption of fibrin, constipation, wound infection, or inter-current infection may lead to a rise of temperature during the first few days following operation.

(a) What methods are used to relieve thirst after operation? (b) What method would you use to relieve pain in the back following operation?

(a) Small pieces of ice or small sips of water, or physiological salt solution by intermittent or continuous rectal administration are used to relieve thirst after operation.

(b) Rub the back with alcohol, massage it well and apply small supporting pillows to the hollow of the back in post-operative back pain. The use of the hot-water bag is sometimes efficacious.

How can you relieve strain on the abdominal muscle after operation?

By applying a large number of adhesive strips across the wound over the gauze dressings and, if necessary, by supporting the patient's abdomen manually when he strains or vomits.

Write the immediate post-operative care of an excision of a cataract.

The patient's eyes are bandaged. He is placed in a darkened room and made to remain absolutely at rest. Any undue pain in the eyes should be reported. The nurse should keep the strictest discipline as to the patient's actions and visitors. Especial care should be exercised in preventing the patient from attempting to rub or even touch the eye or the bandage over it.

The patient must be fed in the recumbent position and must use the bed pan. Even in sleep he must be closely watched. The nurse should not leave the bedside unless some responsible person can take her place.

Give some important points in the nursing care of a patient after tracheotomy.

The patient should have a special nurse on duty night and day with an alternate within call, so that he is never alone for

an instant. The tube must be kept free from obstruction with mucus, and cleaning must be accomplished very rapidly, either by removing the inner tube, or by inserting applicators, wound with sterile gauze, free from shreds, and in strips long enough to be held in the hand, to prevent their slipping into the opening. The air in the room should be kept moist, and a sterile piece of gauze kept over the opening of the tube.

Name a very important early detail in the post-operative care of mastoid cases.

It is most important to watch the dressing for blood stains. When blood soaks through to the outer layers it means that unusual bleeding has occurred. The surgeon should be notified at once.

Outline briefly the nursing care of a patient who has had a breast amputation, emphasizing the important points necessary to the patient's comfort.

1. The patient should be propped up into sitting position.
2. Pillows should be arranged to give support to arm and shoulder.
3. Passive motion of the arm and shoulder should be started about twenty-four hours after operation to prevent adhesions and consequent contractures.
4. The arm should be supported by a sling after the third or fourth day.
5. After an operation resulting in such an extensive scar and deformity, the patient should be kept in as cheerful and hopeful frame of mind as possible.

What nursing measures may help to make a patient more comfortable during the first twenty-four hours after an operation?

1. The room should be quiet and well ventilated. If patient is in an open ward, the bed should be screened.
2. The bed should be clean and warmed with hot water bags before placing patient in the bed. Pillows should be removed, because with the head low the patient suffers less from nausea and shock.
3. Patient should be kept warm with blankets and hot water bags until he has reacted and body has become warm. See that patient is not chilled.

4. Wet gowns and wet bedclothes should be promptly changed.
5. If vomiting occurs, assist the patient by supporting the head and aid in clearing the mouth.
6. Change position of body from time to time but avoid excessive moving. Do not restrain the minor movements of the extremities.
7. Reassure and encourage the patient to sleep.
8. If backache ensues, massage with alcohol and place a small pillow at lumbar region.
9. Gas pains may be alleviated by the insertion of a rectal tube and by changing the position of the body from flat on the back to the side, at the same time flexing the thighs on the abdomen.

What nursing measures can be employed to relieve the so-called "ether back"?

The nursing measures to relieve "ether back" are as follows:

1. Massage of the back and limbs.
2. Support the small of the back with pad or pillow.
3. Turn patient on his side (when permitted), also flex the thighs on the abdomen and support the legs with pillows at the bend of the knees.
4. Apply local heat to the back by means of hot water bag, electric pad or poultices.

Give post-operative care for herniotomy.

As soon as the patient is replaced in bed, a pillow is placed under his knees, and as soon as he is conscious, a scrotal support is applied. Difficulty in voiding may be encountered when all measures should be attempted to aid patient before resorting to catheterization. The patient is usually kept in bed for about two weeks. The general nursing care of any post-operative case is exercised.

What is the nursing care after a harelip operation?

1. First treat the shock which may follow these operations.
2. Absolute rest of the part is necessary. Crying must be prevented. Feedings are given with a sterile medicine dropper.
3. The hands must be restrained.
4. Infection must be prevented by absolute cleanliness of the wound with application of antiseptic solutions.

What are the important points to be remembered when preparing an ether bed?

The preparation of the bed is essentially the same as the preparation of any other hospital bed with the following exceptions:

1. Extra rubber sheets are usually necessary at the head of the bed.
2. The bed should be warmed with hot water bottles before the patient is replaced in the bed following the operation.
3. No pillow is used. A rubber covered with a towel replaces the pillow.
4. The bed must be made in such a way that the clothing may be easily turned back.
5. Extra blankets should be available.

CATHETERIZATION

Of what four materials are catheters made? How are they sterilized?

Catheters are made of glass, metal, elastic rubber and silk.

Glass and metal catheters are washed in soap and water, rinsed in running water and boiled for ten minutes.

Soft rubber catheters are washed in running water and boiled for 5 minutes.

Silk catheters are either (a) washed in soap and water, and then boiled for 2 minutes, being careful not to grasp them with forceps, or lift them while hot, or (b) washed in soap and water, rinsed in running water, soaked in 3 per cent. formalin or 1 to 1000 bichloride of mercury solution for 15 minutes, and then rinsed in 3 changes of sterile water.

Outline preparation and technic for catheterization in the female.

The materials for catheterization should consist of: (a) a sterile glass or rubber catheter; (b) sterile sponges; (c) a basin of sterile water; (d) a basin of 1-1000 bichloride of mercury solution; (e) a receptacle for the urine; (f) a pair of rubber gloves or 4 finger cots for the nurse. All materials should be sterile. A small jar of sterile glycerine or other lubricant is frequently added.

The preparation of the patient consists in the careful cleansing of the vulva and the area around the urinary meatus with—first,

sterile water and then bichloride solution. The preparation of the nurse consists in scrubbing of the hands as for operative preparation, the donning of sterile gloves on both hands, or sterile finger cots on the thumb and index finger of each hand.

The nurse and patient having been prepared, the labia are separated with the thumb and index finger of one hand and the catheter gently introduced, after lubrication, with the corresponding fingers of the other hand. After the catheter has been withdrawn, the parts should be sponged off with bichloride of mercury solution followed by sterile water.

Describe in detail the method of washing out the female bladder.

The nurse should have ready on a tray sterile towels, two small sterile vessels for the urine and a graduate for measuring it, sterile sponges, lubricant, catheters (2), the irrigating fluid (frequently a saturated solution of boric acid) and a sterile 6-ounce glass funnel with 18 inches of tubing stepped down to fit the catheter. The patient is placed on her back, her dress rolled up around her waist and a sheet placed over her knees. The sterile towels are draped about the vulva and below and the basin placed in position. Separate the labia with the left hand and with the right gently sponge the urinary meatus and adjacent parts. Place a sterile sponge under the meatus, dip the catheter, previously attached to the funnel and tubing, in the lubricant, and pass it gently into the bladder. Lower funnel and drain off urine into a bowl. Place another bowl in position and slowly pour about 8 ounces of fluid into the bladder. Lower the funnel and siphon off about 4 or 5 ounces, and repeat this pouring in and siphoning several times, pinching the tubing between siphonings to prevent the entrance of air.

Of what strength is a boracic acid solution frequently used for bladder irrigation?

From one-half to a completely saturated solution of boric acid is frequently used for bladder irrigation.

- (a) Tell how to prepare for a cystoscopic examination.
- (b) Tell how to prepare for a lumbar puncture.

(a) Place patient in the lithotomy position draped as for operation and covered with sterile towels. The room is usually

darkened. Have cystoscope ready, also light connection, sterile salt solution in irrigator, lubricant and sterile dressings.

(b) Patient is placed in sitting position bent forward, or lying with lumbar convexity toward operator. Prepare field with alcohol or iodine and drape with sterile towels. Have ready sterile needles, test tubes to catch fluid and sterile sponges and adhesive tape.

INFUSION—TRANSFUSION—HYPODERMOCLYSIS

In a private house, how would you prepare and give a hypodermoclysis of normal salt solution?

Dissolve a level teaspoonful of table salt in a pint of water, and strain through cotton flannel. Place in a fruit jar that has been boiled, set in a pan of water, and boil for half an hour, replacing the water lost by evaporation with boiling water. The fruit jar should not touch the bottom of the pan directly.

Having sterilized the container and tubing by boiling and having attached a sterile needle, pinch the tube near the container with a hæmostat and fill the container with salt solution.

Prepare the skin at the lower outer quadrant of the breast, or in the thigh, by washing with alcohol and painting with half strength tincture of iodine. Draw up a fold of skin with the left hand, have your assistant allow the salt solution to run, and when it issues from the needle at a temperature not above 110° F., insert the latter under the fold of skin raised by pinching. Gently massage the tumefaction and allow the solution to run very slowly. On withdrawing the needle, seal the orifice with adhesive plaster. In an emergency a fountain syringe boiled for 20 minutes may be used as a container for the solution.

(a) What is hypodermoclysis and why is it used? (b) What is intravenous infusion? (c) What is transfusion?

(a) Hypodermoclysis is the administration of physiological, or so-called "normal" salt solution, by the hypodermic method. It is used to replace blood lost in hæmorrhage, in shock and to combat toxæmia in septic conditions.

(b) Intravenous infusion is the administration of physiological salt solution directly into a vein.

(c) Transfusion is the operation by which the blood of one animal is allowed to run into the blood-vessels of another animal.

In giving an intravenous injection, what precaution is taken to prevent air from entering the vein?

See that the salt solution is flowing freely from the end of the needle or cannula, and all air and air-bubbles are expelled before the solution is allowed to enter the vein.

What articles would you have ready for an intravenous infusion?

A one-litre flask of physiological salt solution, heated to 110° F.

An infusion bottle or can, with a sufficient length of rubber tubing, both sterilized by heat.

A sharp-pointed aspirating needle.

A package of gauze sponges.

A half dozen towels—all sterile.

A small bottle of alcohol and a bottle of tincture of iodine, or some tincture of green soap and a pan of 1-1000 bichloride of mercury solution.

A thermometer, in a bottle of 2 per cent. carbolic acid.

An Esmarch bandage or a tourniquet.

If the vein is to be exposed, in addition to the above:

Several sterile ligatures.

A blunt intravenous needle.

A scalpel, tissue-forceps, ligature carrier or aneurism needle, 3 hæmostats, needle holder, skin needle, sterile gauze pads and bandage.

The field of operation should be carefully shaved the night before if iodine preparation is used, or several hours before operation if the alcohol-bichloride method prevails. The preparation and disinfection of the field proper may be accomplished by (a) scrubbing with green soap and water, washing with alcohol, ether, and 1-1000 solution of bichloride of mercury, or (b) scrubbing with benzine and painting with equal parts of tincture of iodine and alcohol.

Name two methods of transfusion.

(1) The direct, or arterio-venous method, in which an artery of the donor is connected to a vein of the recipient, and

(2) The indirect, or syringe method, in which venous blood is drawn from a vein of the donor with a record syringe and injected into a vein of the recipient.

SHOCK AND POST-OPERATIVE COMPLICATIONS

Describe and give nursing care of shock.

The signs and symptoms of shock are pallor, coolness of skin surface frequently accompanied by cold perspiration; temperature falling to subnormal; rapid, irregular and weak pulse; increased respiration; mental hebetude and pinched, ashen facies.

The nursing care consists in avoiding all possible sources of fear and anxiety to the patient before operation, and after operation applying heat to the skin surfaces, elevating the foot of the bed, and giving normal salt solution by rectum, or such hypodermic medication as may be ordered, and bandaging the extremities.

How do the symptoms of post-operative shock and internal hæmorrhage compare?

The symptoms and signs are similar, excepting that there is usually more mental anxiety in hæmorrhage (provided the patient is not under anæsthesia) and thirst is marked.

What are the symptoms of intestinal perforation?

A sudden sharp pain, followed by a fall of temperature, symptoms of shock, nausea and vomiting. In a short time the temperature may rise and symptoms of peritonitis—distention, obstinate constipation, rapid and weak pulse, projectile and fæcal vomiting—may ensue.

What is prolapsus ani?

An eversion of the mucous membrane of the anus, so that some of it remains permanently outside the sphincter muscle.

What is to be especially noted after breast amputation?

The dressings should be inspected and the pulse watched for evidences of post-operative hæmorrhage. Œdema of the hand from tight bandaging, and pressure paralysis should also be looked for and reported, if present.

What is acute peritonitis, its cause and symptoms?

Acute peritonitis is an acute inflammation of the peritoneum.

It is caused by the entrance of bacteria into the peritoneal cavity, by a wound carrying infection from without, or by transudation of infection through the walls of hollow viscera, by rupture

of an abscess into the cavity, or by passage of organisms through the damaged visceral peritoneal walls.

The signs and symptoms are muscle spasm, tympany, pain and tenderness of the abdomen, absence of peristalsis, obstinate constipation, nausea and vomiting, the latter frequently of a projectile type, fever and rapid pulse.

(See also under "General Nursing.")

What symptoms following an abdominal incision would indicate peritonitis?

Pain, abdominal distention, obstinate constipation, and inability to pass gas by bowel, spasm of abdominal muscles, fever, rapid pulse, nausea and vomiting.

Would you consider jaundice in a patient after an operation not connected with the liver serious? Why?

Jaundice unaccompanied by other symptoms would not occasion alarm, but would require careful scrutiny. Jaundice accompanied by toxæmic symptoms would be serious, as it would indicate some severe metabolic disturbance or an infection—acute yellow atrophy of the liver or multiple liver abscess.

Name some of the complications which may arise after a major operation.

Shock, hæmorrhage, acute gastric dilatation, intestinal obstruction, infections, acidosis, pneumonia, retention and suppression of urine are post-operative complications.

What two special dangers would you watch for immediately following operation?

Shock and hæmorrhage.

What are the symptoms of an intestinal obstruction?

Marked distention of bowels with gas.

Constipation or incomplete bowel movements. There may be passage of blood or mucus.

Persistent vomiting later becoming fæcal vomiting.

Usually severe pains, either local or generalized.

Name six post-operative complications.

1. Hæmorrhage.

2. Shock.

3. Embolism.
4. Pneumonia.
5. Intestinal obstruction.
6. Peritonitis.

Differentiate between primary and secondary hæmorrhage.

Primary hæmorrhage is bleeding which occurs at the time of injury or operation and during the first forty-eight hours thereafter.

Secondary hæmorrhage is bleeding which occurs after forty-eight hours from time of operation or injury until complete cicatrization of the wound.

What symptoms indicate a post-operative phlebitis? How is such a condition treated?

The symptoms of a post-operative phlebitis are cramp-like pains in the extremity, rise of temperature, malaise, and redness, heat, tenderness and swelling over the vein involved.

The condition is treated by absolute bed rest, elevation of the extremity, and application of ice bag. Rubbing and massage are contraindicated.

State three conditions which might cause a post-operative rise in temperature.

1. Infection.
2. Absorption of toxic substances from diseased tissue.
3. Constipation.

What distressing accident may occur post-operative during convalescence, which gives no warning or time for treatment?

Pulmonary embolism is a distressing accident which may occur during post-operative convalescence, which gives no warning or time for treatment.

(a) **What are the causes of post-operative pneumonia?**
(b) **What care can a nurse give to prevent this complication?**

- (a) 1. Chilling on removal from the operating room or while under anæsthetic.
2. Aspiration of mucus or vomitus while reacting from the anæsthetic.

3. Lying a long time in one position, especially if the circulation is weak or impaired.
- (b) 1. See that patient is kept warm at all times.
2. Have patient's head turned to side so that mucus or vomitus will be drained from mouth and pharynx. Wipe out mouth as occasion demands.
3. Occasional turning of the patient will prevent pulmonary stasis.

What are the dangers which might arise while one is making a lumbar puncture?

The patient may struggle and the needle may be broken off in the spinal column, or a spinal vein may be punctured with resulting hæmorrhage.

Too much fluid may be withdrawn, or withdrawn too rapidly and cause the medulla to be forced into the foramen magnum, especially when intracranial pressure is present.

Infection may be introduced into the spinal canal.

INFLAMMATION AND INFECTION

(a) What are the symptoms of inflammation? (b) How does inflammation terminate?

(a) The symptoms of inflammation are pain, heat, redness and swelling.

(b) Inflammation terminates in resolution by absorption of the inflammatory exudate through the lymph channels, or in suppuration with a local loss of tissue.

What is meant by the term hæmolytic when applied to an organism such as the streptococcus?

A hæmolytic streptococcus is an organism which causes a hæmolysis, or a breaking down of the blood in the course of its life cycle in the animal which it infects. Its ability to do this also in blood culture is a criterion for its identification in the laboratory.

Name five of the greatest sources of infection in surgical work.

The hands of the nurse, or assistants.

The hands of the operator.

The skin of the patient.

The sutures.

The sponges and dressings.

What do you understand by digital infection?

A digital infection is an infection in an organism introduced through contact with a human finger carrying on its surface some pathogenic bacteria.

HÆMORRHAGE

Tell us what you know of the means to be employed for the prevention and treatment of surgical hæmorrhage.

The preventive treatment of surgical hæmorrhage consists (a) in making coagulation time tests of the blood before operation and deferring operation on and treating patients having slow coagulation; (b) in exercising proper care in tying ligatures at all bleeding points during operation, in using pressure or hot compresses to control oozing before closing the wound, and in applying elastic pressure by properly bandaging the wound.

The post-operative treatment consists in finding the bleeding point under aseptic precautions, ligating the bleeding vessel and applying heat and pressure.

The emergency treatment consists in making pressure with the fingers or a tourniquet on the blood-vessel proximal to the bleeding point, or, in the case of an open wound or a cavity like the vagina or uterus, packing with sterile gauze under aseptic precautions.

In an emergency, how would you control arterial hæmorrhage below the elbow?

By making deep pressure with a knotted handkerchief over the inner surface of the arm, between the biceps and triceps muscles, at the juncture of the upper and middle thirds, where the brachial artery may be readily palpated.

What are the symptoms of hæmorrhage?

Pallor, anxiety and restlessness, thirst, lowered pulse tension, increasing rapidity of the pulse, air-hunger, with the appearance of blood in external hæmorrhage, or without such appearance in the internal variety.

What is the object of raising the foot of the bed in shock or in abdominal hæmorrhage?

To promote the return of the venous blood, to prevent anæmia of the brain, and to raise the arterial blood-pressure, which is always low in hæmorrhage and shock.

What are the symptoms of internal hæmorrhage, and how treated?

A fall of pulse tension, an increasing pulse rate, a drop in temperature if fever has existed, increased anxiety, restlessness and thirst. The expectant treatment consists in placing the patient at rest, raising the foot of the bed, applying ice to the body cavity where hæmorrhage is suspected (thorax or abdomen) and administering morphine by hypodermic injection. The surgical treatment consists in ligating the bleeding vessel if such procedure is possible.

What are the three varieties of hæmorrhage and how are they recognized?

Capillary, venous and arterial hæmorrhage are the three varieties encountered.

Capillary hæmorrhage, an oozing of red blood.

Venous hæmorrhage, an oozing of dark blood in larger quantities.

Arterial hæmorrhage, a spurting of red blood.

What should a nurse do in case of hæmorrhage following tonsillectomy until the arrival of the surgeon?

The nurse should insert a mouth-gag, determine if possible the site of the hæmorrhage, and apply pressure with a sponge on a forceps or sponge-holder, making slight counter-pressure externally on the throat. The use of a styptic, such as glycerite of tannin, on the sponge will sometimes be efficacious.

Mention three means to control hæmorrhage.

(a) By the application of heat or cold.

(b) By pressure.

(c) By finding the bleeding vessel and ligating it.

APPENDICITIS

What symptoms would you note and report following an operation for ruptured appendix?

Pallor, coolness of the skin, subnormal or falling temperature, irregular low-tension pulse, and increased respirations, suggesting shock; pallor, air-hunger, rapid pulse, suggesting hæmorrhage; distention, pain, vomiting progressively increasing, projectile in type and with vomitus black in color, and inability to move the bowels by enemata, suggesting intestinal obstruction, ileus, or general peritonitis—the latter especially if accompanied by fever—are symptoms to be noted and reported following operation for ruptured appendix.

The general symptoms, as pain, thirst, vomiting or nausea, etc., should also be noted.

What would be unfavorable symptoms within 24 hours of an operation for ruptured appendix?

Persistent vomiting, thready pulse, failure of the intestines to expel gas and absence of bowel movement, and either very high or marked subnormal temperature.

BURNS

What would you apply to a burn in an emergency?

Carron oil, a mixture of linseed, cottonseed or olive oil with lime water; or if this was not available, olive oil or a solution of bicarbonate of soda applied on gauze.

What is a burn and what serious complications sometimes follow it?

A burn is a trauma produced by extreme heat. Infection, nephritis, gastric or duodenal ulcer and deforming cicatricial contractions may follow extensive burns.

How are burns classified?

Burns are classified as to their severity in four degrees: 1st degree, simple redness; 2d degree, separation of layers of skin and effusion of serum, forming blisters; 3d degree, the deeper layers of the skin are destroyed; 4th degree, the entire skin and some underlying tissues are charred and destroyed.

(a) Give care of burns caused by acids, (b) by alkalies.

(a) Cover with paste of bicarbonate of soda or chalk. Afterward treat as ordinary burn.

(b) Wash with mild acids, as vinegar diluted in water. Then treat as other burns.

How would you remove clothing from a badly burned person?

Cut it off, so that there will be as little injury done to the patient as possible.

GANGRENE

How long can the blood supply to an extremity be cut off by a tourniquet without danger of gangrene?

This depends on the vitality of the part. In a more or less normal limb the tourniquet may be applied for a maximum of an hour.

ERYSIPELAS

What is erysipelas? Give nursing care.

Erysipelas is an acute infectious disease affecting the skin and subcutaneous tissues and sometimes the mucous membranes, characterized by the formation of reddened raised areas with blebs, showing no tendency to pus formation or necrosis, and ending in spontaneous healing without scarring. The streptococcus erysipelatis is the causative agent, gaining access through an abrasion in the skin. The constitutional symptoms are those of an acute febrile disease, lasting from 5 to 10 days.

The nursing care is that of any febrile disease, excepting that the patient should be isolated from other surgical patients, and the nurse should attend no other patients, unless she has worn a gown and rubber gloves and sterile cap while in attendance upon the infected patient. Cold compresses may be necessary when the eyes are involved, and the care of the mouth is important.

To what is erysipelas due? How does the germ gain entrance to the body?

Erysipelas is due to a special strain of the streptococcus germ. The germ gains entrance to the body through a minute abrasion of the skin.

How soon may erysipelas appear after exposure?

Erysipelas may appear from twenty-four to forty-eight hours or even several days after exposure.

When would you isolate a case of erysipelas and for what reason?

Erysipelas should be isolated if it occurs in a dwelling or an institution where there are other patients with surgical or other wounds, and especially if obstetrical patients are in direct or indirect contact with the patient.

Erysipelas is a highly infectious disease, easily transmitted through even minute wounds.

PHLEBITIS

Mention points to remember in the care of a patient with phlebitis.

The affected part, which is usually an extremity, is elevated and ice bags applied, if ordered by the physician. The limb should be moved as little as possible and should never be rubbed or massaged, as this treatment might dislodge the thrombus, produce an embolism, and result in sudden death.

TETANUS

What is tetanus? What are its symptoms? Name precautions to prevent.

Tetanus is a specific disease caused by the infection of a wound with the tetanus bacillus. The symptoms are stiffness and then spasm of the muscles of the jaw and neck, later extending to the trunk and legs, and fulminating in convulsions when touch, sight, or hearing reflexes are stimulated.

To prevent tetanus give punctured wounds soiled with earth as much access to air as possible, and give immediate prophylactic doses of anti-tetanus serum.

What special point should be emphasized in nursing tetanus?

In nursing tetanus all such reflexes should, if possible, be prevented, the patient lying in a quiet, darkened room, and being molested as little as possible.

WOUNDS

What is one important rule to follow in the "first aid" care of wounds?

The wound should never be touched with the fingers in first aid care.

What would you do in "first aid" care of wounds?

Cleanse the wound, check hæmorrhage. Apply a sterile or antiseptic dressing.

What is meant by wounds healing by first intention and second intention?

A wound heals by first intention when the separated cells heal by direct continuity without noticeable loss of tissue, and by second intention when the wound is filled with granular, or scar tissue, replacing that lost.

Classify wounds.

Wounds are classified as lacerated, incised, contused, punctured, poisoned and gunshot.

Any of the foregoing may be septic or aseptic.

When wounds are near large body cavities they are penetrating or non-penetrating.

Define incised wound, lacerated wound, contused wound, punctured wound.

An incised wound is made by cutting.

A lacerated wound is one in which the tissues are torn.

A contused wound is one in which the skin is not broken, but the tissues beneath the skin are injured.

A punctured wound is a wound made by a pointed instrument.

Define (a) a poisoned wound, (b) a subcutaneous wound, (c) an infected wound, (d) an open wound, (e) a suppurating wound.

(a) A poisoned wound is a wound in which the poison has been injected at the time the wound is made.

(b) A subcutaneous wound is an abrasion under the skin, as running a needle under finger nail, etc.

(c) An infected wound is a wound into which pyogenic bacteria have gained entrance.

(d) An open wound is a wound in which the tissues have been laid open.

(e) A suppurating wound is a wound in which the tissues slough away.

When is drainage in wound used?

Drainage is used when a wound infection is present or if it is feared or expected.

What is the Carrel-Dakin treatment for infected wounds?

The Carrel-Dakin treatment consists in more or less continuous irrigation of the wound with the freshly-made and neutralized solution of hypochlorite of soda which was first prepared by Dakin and used by Carrel. Both the technic of preparation of the solution, and of its application have undergone a number of modifications.

Would you wash the surface surrounding a wound away from or towards the wound?

What ought you to avoid in washing wounds, and what is the best method?

You should wash away from, not toward, a wound. You should avoid touching a wound, clean or infected. The best way to accomplish this is not to handle sponges with the fingers. Sponges should be seized by sterile forceps and dipped in solution and wrung out by means of a sterile forceps or hæmostat in each hand. This will avoid contamination either of the nurse or the patient.

Give four symptoms of local wound infection.

Pain or tenderness.

Fever.

Redness or tumefaction.

Malaise.

Name two ways in which a clean wound may become infected.

(1) By slipping of the dressings and exposure of the wound.

(2) By contact with non-sterile hands or dressings while redressing.

What kind of wounds are most likely to be infected with tetanus? Why?

Punctured or closed wounds are most likely to be infected with the tetanus bacillus because this organism is an anærobe, thriving in the absence of oxygen.

What methods are used to prevent exterior wound infection?

Early disinfection and then sterile technic in treating or dressing wound.

Proper drainage of wound and dry dressings.

Irrigation with antiseptic solutions, such as Carrel-Dakin's solution.

(a) Explain healing by granulation. (b) In what classes of wounds does it occur?

(a) Healing by granulation is the repair of tissue by the formation of new cells from connective tissue cells. The new cells start growing from the sides and bottom of the wound. This continues until the cavity of the wound is filled and level with the surface. This tissue gradually contracts and becomes dense scar tissue.

(b) Healing by granulation occurs where there is destruction as well as separation of the tissues.

What immediate precautions against infection would you take in animal and insect bites?

First aid treatment of punctured wounds produced by animals or insects consists in cleansing the wound well with alcohol and applying tincture of iodine freely and covering the injured part with a sterile dressing.

FRACTURES—DISLOCATIONS—TRAUMA

What is a fracture? A dislocation?

A fracture is a solution of continuity of a bone.

A dislocation is an abnormal displacement of the articular portion of the bones entering into the formation of a joint.

(a) What are the symptoms and signs of a fracture? (b) Give five different forms of fracture, describing each.

(a) The symptoms of a fracture are pain and loss of function. The signs are deformity and crepitus with false motion.

(b) 1. Compound fracture: a fracture with a wound of the skin and soft parts.

2. Comminuted fracture: a fracture when the bone is broken into several pieces.

3. Greenstick fracture: an incomplete fracture in which only a portion of the thickness of a long bone is involved with bending at the point of fracture.

4. Complicated fracture: when some other injury, as a dislocation, accompanies a fracture.

5. Impacted: when two main fragments of a fracture are held together in a new relation by the violence which caused the fracture.

Name several devices by which a temporary splint may be provided for a fractured leg.

A pillow fastened around the leg with safety pins makes an ideal splint. A piece of ordinary board, not too thick, or a barrel stave, may be used, with a covering of cotton or woollen cloth, if possible, to prevent discomfort. In an emergency, any material stiff enough may be utilized—an umbrella, a walking stick, a sapling, bed slats, etc., may be laid alongside the injured member and fixed as a support with bandages.

(a) What would you do in an emergency as first aid in a fracture of both bones of the leg? (b) In applying a dressing to any fracture, what is the important thing to be accomplished?

(a) Apply a splint made of pillow, pinned across the leg from the ankle to above the knee, or a thin piece of wood, as a barrel stave, properly padded, and applied in the same way, and fastened in place with muslin bandages.

Do not permit any handling in attempts to extend or reduce the fracture until a physician takes charge.

(b) The important thing to accomplish is to prevent motion in the fragments and minimize the danger of tearing the skin and soft parts.

What is a contusion?

A contusion is the result of injury by a blunt instrument, and consists of a bruising and lacerating of the tissues.

(a) What is Colles' fracture? (b) Pott's fracture?

(a) A Colles' fracture is a fracture of the lower end of the radius, transverse or nearly so, the line of fracture being within $1\frac{3}{4}$ inches from the wrist joint. A characteristic "silver-fork" deformity is usually present.

(b) A Pott's fracture is a fracture of the lower fifth of the fibula, with also a fracture of the basilar portion of the internal malleolus and rupture of the tibio-fibular ligament. The foot is everted and abducted.

What is meant by extension and counter-extension as applied to the treatment of fractures?

By extension in fractures is meant traction applied to the extremity of a limb, or other portion of the bony skeleton, with the intention of placing or retaining the fragments of bone in alignment. Counter-extension is traction made in a proximal direction while distal traction is being maintained.

What articles should the nurse assemble for the application of a plaster of paris bandage?

(1) Several plaster bandages. (2) Two basins with warm water. (3) Cotton wadding in rolls, or flannelet. (4) A scissors. (5) A knife.

What is a sprain and what is the treatment?

A sprain is a dislocation that is immediately and automatically reduced.

A severe sprain should be kept at rest, the joint elevated and either hot fomentations or cold evaporating compresses applied. Bandaging or strapping with adhesive should be employed as soon as the swelling subsides.

When a surgeon wishes to apply Buck's extension, what appliances should the nurse have at the bedside for his use?

Two strips of adhesive plaster 2 inches wide and 30 inches long. A dozen 1-inch strips of same length. Two 2-inch buckles to attach to ends of strips, by sewing them on. A piece of webbing 1 inch wide and 14 inches long.

Two pieces of splint board $1\frac{1}{2}$ by $3\frac{1}{2}$ inches.

A piece of window cord about 4 feet long.

A pulley attached to an iron rod that may be clamped to the bed. Four 5-pound weights.

The two strips of adhesive with the buckles sewed on are attached to the leg from the middle of the thigh to a couple of inches below the ankle, the buckles being in the latter position. The narrow strips are used in diagonal windings as reinforcement.

The two pieces of splint board are placed opposite each other in the centre of the webbing and fastened in place with adhesive plaster, so that the webbing lies between them. A hole $\frac{1}{4}$ inch in diameter is bored through this spreader, through which the knotted cord is drawn. The spreader is then drawn through the buckles and fastened in place. Extension may then be made by setting the pulley and attaching weights.

What may a nurse do for a compound fracture of the femur until the arrival of the surgeon?

Cut away clothing and clean wounded surface with alcohol. Place on wound a compress of sterile gauze saturated in solution of bichloride of mercury, 1-1000, and, if patient must be moved, place a long board under the limb, reaching from heel to armpit, strapping it in place with muslin strips and binding both legs together. Be very careful to make the fractured limb as immobile as possible and allow no meddlesome attempts at reduction until the surgeon arrives.

What should a nurse have ready for a compound fracture of the forearm?

Tr. iodine, sterile dressings, bandages and lateral splints. If wound is extensive she should have sutures and instruments and drainage.

(a) What is meant by fibrous union in a fracture? (b) What is an absorbable ligature? Name two materials of which it may be made.

(a) By fibrous union is meant a union of the fractured ends of the bone by connective tissue instead of osseous tissue.

(b) An absorbable ligature is a ligature which becomes digested and absorbed by the body tissues and fluids in which it may be buried. Such ligatures may be made of catgut or kangaroo tendon.

356 STATE BOARD QUESTIONS AND ANSWERS

Which of the following is in the greater danger from suppuration: (a) a simple fracture, (b) a compound fracture? Why?

A compound fracture is in the greater danger from suppuration because a compound fracture is accompanied by wounds of the soft parts and there is danger of infection.

What is the nursing care of a patient with a fracture of the base of the skull?

Nursing care consists of keeping the patient absolutely quiet and watching for symptoms of compression which are as follows:

1. Loss of consciousness, passing into deep coma.
2. Discharge of blood or clear fluid from the ears, nose or mouth.
3. Inequality of the pupils.
4. Very slow or rapid pulse.

ORTHOPÆDIC SURGERY

What is orthopædic surgery?

Orthopædic surgery is the branch of surgery which deals with the correction of deformities, especially those occurring in children.

Mention an early symptom which would lead you to suspect the existence of some orthopædic disease.

Absence or restriction of motion in an extremity, or a marked deviation from the normal in the appearance of an extremity, would lead one to suspect a condition amenable to orthopædic surgery.

Name three types of patients in which orthopædic measures are usually employed.

1. Congenital club foot.
2. Congenital dislocation of hip.
3. Anterior poliomyelitis in paralytic persons.

Define: exostosis, talipes, epiphysis, trauma.

An exostosis is an exuberant growth of bony tissue on the surface of a bone.

Talipes is a congenital deformity of the foot, commonly known as club foot.

An epiphysis is a piece of bone separated from the long bone in early life by cartilage, but later becoming a part of the larger bone.

Trauma is any tissue injury produced by physical means.

Give cause, preventive measures and curative measures in rickets.

(See "Pædiatrics.")

Name three deformities of the feet which may be prevented by properly fitted shoes.

1. Hallux valgus or bunions.
2. Hammer toe.
3. Pes planus.

Mention the important points in caring for a patient in an extensive plaster cast.

1. The skin at edges of cast must be closely watched for evidence of irritation, chafing and pressure sores.

2. The parts above and below cast should be watched for signs of impaired circulation, such as pallor, cyanosis, oedema, or subjective symptoms of numbness, tingling or pain.

3. In moving patient, care must be taken not to break or bend the cast.

4. In aged patients or in infants, constant changing of position should be done as a precaution to avoid hypostatic congestion.

Outline nursing care of a patient with Pott's disease.

1. Clothing. The cotton night shirt should be open at the back.

2. Feeding. Children should learn to feed themselves while lying on the back. Drinking may be accomplished by means of drinking tubes. Smaller children should be assisted in feeding by nurse.

3. Bathing. Care of the skin is very important. The daily bath is given in the morning and at night the back is rubbed with alcohol and the skin over bony prominences given special massage.

4. Moving of patient. Moving of the patient is done only when necessary and at such times great care is taken to maintain the immobilization of the vertebral column.

5. Care of bowels. It is important that this type of patient have daily evacuation of the bowels.

(For additional questions on this subject see "Pædiatrics.")

GYNÆCOLOGICAL NURSING

ANATOMY AND PHYSIOLOGY OF THE FEMALE GENERATIVE ORGANS

Name the female external genitals.

Female external genitals are mons veneris, labia majora, labia minora, clitoris, hymen, and urethral and vulvo-vaginal glands.

Name the female urinary organs. State function of each.

Urinary System	{	Kidneys (2)—secrete urine.
		Ureters (2)—ducts which convey urine from the kidneys to the bladder.
		Bladder (1)—reservoir for urine.
		Urethra (1)—tube through which the urine is voided.

Name the organs contained in a female pelvic cavity.

The internal reproductive organs are contained within the female pelvic cavity. They consist of the ovaries, the Fallopian tubes, a part of the vagina and the uterus with its ligaments. The rectum and the bladder also lie partly within the pelvis.

State the function of each of the pelvic generative organs.

The ovaries develop the ovum in the Graafian follicles, which, when they rupture, pass the ova on to the fimbria of the tubes. Lying within the Fallopian tube the ovum is pushed along by ciliary action to await fertilization. The uterus receives the impregnated ovum and allows it to develop by hypertrophying and supplying the placenta with blood. The vagina is the inlet and outlet of the uterus.

Locate Bartholin's glands. Give their function. How do they appear when infected?

Bartholin's glands lie within the mucous membrane at the base of the labia minora just within the vagina, where their ducts are visible, one on each side. They secrete a watery fluid that moistens the vulva. When infected they are palpable as large

nodules at vulvo-vaginal margin, while their duct lips are everted and contain pus.

Describe and locate Skene's glands. In what disease are these glands usually inflamed?

Skene's glands are two tubules just large enough to admit a No. 1 F. probe, that lie upon the floor of the urethra. They are almost parallel to its course, less than an inch in length and lie just inside the meatus in the female.

In gonorrhœal urethritis the glands are nearly always inflamed and are a frequent cause of persistence of the infection.

Describe the uterus and Fallopian tubes.

The uterus is a hollow, pear-shaped organ, about 3 inches in length in the non-pregnant state. It is composed of muscular tissue almost covered with peritoneum and lined with mucous membrane. It is supported by various ligaments and has the bladder in front of it and the rectum behind it. The upper rounded portion is called the fundus, the middle portion, the body, or corpus, and the lower constricted portion opening into the vagina, the cervix.

The Fallopian tubes are two trumpet-shaped tubes from 4 to 5 inches in length, extending from the upper angles of the uterus, just below the fundus, toward the sides of the pelvis. They open directly into the abdominal cavity near the ovaries and are lined with ciliated epithelium communicating with the uterus. The fringe-like end lying near the ovary is called the fimbriated extremity.

Describe the position and function of the broad ligament.

The broad ligament is formed by a fold of the peritoneum, which drops down over the uterus and some lateral connective tissue investing the fundus, body, part of the cervix, and part of the posterior wall of the vagina. It unites on each side of the uterus to form a broad, flat membrane which extends laterally to the pelvic wall.

The broad ligament contains the ovaries and ovarian ligaments, the Fallopian tubes, the round ligaments and blood vessels, lymphatics and nerves. It serves as support to the uterus and to hold the above-named structures.

Where is the perineum found? Describe the female perineum.

The perineum is the space bordered by the anus behind, the external genital organs in front and the ischial tuberosities laterally. The female perineum has its upper surface covered by the lower wall of the vagina, its posterior surface in contact with the rectum, its external surface covered with skin and lying between the vulva and anus. It is made up of skin, fascia and some muscle tissue, the insertions of the levator ani and the transversus perinei muscles being most important in obstetrics.

What is the coccyx?

The coccyx is a small triangular bone attached by ligamentous union to the end of the sacrum.

(a) What is the function of the ovaries? (b) Of the Fallopian tube?

(a) The ovary furnishes an internal secretion to the body which influences metabolism, but its chief function is ovulation—the ripening of the ovum in the Graafian follicle and extruding it into the Fallopian tube—which occurs during normal sexual life in the female about every 28 days.

(b) The function of the Fallopian tube is to hold the ovum, and carry the spermatozoön upward until the ovum has been fertilized.

How does the female pelvis differ from the male?

It is broader, deeper and more basin-like to perform its obstetrical function.

State the function of the uterus.

To receive the impregnated ovum, to hold and nourish the same until the fully developed foetus is ready to be expelled, then to expel the foetus and placenta.

DEFINITIONS

What is meant by the word “gynæcology”?

Gynæcology is the science which treats of the female constitution and particularly of diseases and injuries of the female genitals.

Define: ovulation.

Ovulation is the formation and discharge of the unimpregnated ovum from the ovary.

Define metrorrhagia, endometritis, colporrhaphy.

Metrorrhagia is an abnormal uterine flow.

Endometritis is inflammation of the mucous membrane of the body of the uterus.

Colporrhaphy is an operation upon the vagina.

Name the various disorders of menstruation.

The disorders of menstruation are amenorrhœa, menorrhagia, metrorrhagia, dysmenorrhœa, vicarious menstruation.

Define puberty, menopause.

Puberty is the age at which the genital organs become functionally active. In temperate climates it occurs in the female at from 12 to 15 years of age. The menopause is the period of life when the menses normally cease.

Define: subinvolution, catamenia, dystocia, embryotomy, urethra.

Subinvolution means incomplete involution, as when the uterus fails to undergo the usual retrograde changes after pregnancy.

Catamenia is the monthly discharge from the uterus—the menses.

Dystocia is difficult, slow, or painful childbirth.

Embryotomy is the cutting or separation of any part or parts of the foetus in embryo to facilitate delivery.

Urethra, the membranous canal forming the communication between the neck of the bladder and the external surface. In the female this canal is about 2 inches long, and its external orifice is the urinary meatus lying between the angle of the labia minora and the vaginal orifice.

Define: salpingitis, curettage, ovariectomy.

Salpingitis is an inflammation of the Fallopian tube.

Curettage is the operation of removing unhealthy tissue with a curette.

Ovariectomy is a term used to describe the removal of an ovarian tumor after laparotomy. The more correct term, oöphorectomy, is now more frequently used.

What is dysmenorrhœa? Menorrhagia? Amenorrhœa?

Dysmenorrhœa is painful and difficult menstruation.

Menorrhagia is profuse and excessive menstruation.

Amenorrhœa is absence of menstruation.

Define oöphorectomy.

Oöphorectomy is a term used to describe the surgical removal of the ovary.

Define: parturition, viable, cystitis.

Parturition is the state of being in labor.

Viable means able or likely to live, as in the case of an unborn child or foetus.

Cystitis is an inflammation of the bladder.

Define: rectocele.

A rectocele is a hernia of some portion of the rectum into the vagina due to a previous perineal tear.

What do you understand by menstruation?

Menstruation is the physiological modification occurring in the female generative organs in anticipation of the reception of a fertilized ovum, consisting in a thickening and modification of the uterine mucosa and, in the absence of pregnancy, a bloody, serous discharge. It normally takes place every 28 days, except in pregnancy and lactation, from puberty to the menopause, and lasts from 3 to 5 days.

Define: hysterectomy, perineorrhaphy and salpingectomy.

Hysterectomy is the operation of removing the uterus.

Perineorrhaphy is the operation of suturing the lacerated or relaxed perineum.

Salpingectomy is the operation of removal of the Fallopian tube.

What is ectopic gestation? Why is it so dangerous?

Ectopic gestation is the maturation of the fertilized ovum and its implantation outside of the uterus. It practically always occurs in the Fallopian tube.

It is dangerous because rupture of the pregnant tube with profuse hæmorrhage and shock is a frequent occurrence after the second month.

What is ectopic pregnancy? What is its treatment?

(See above.) The ligation of the bleeding vessels and salpingectomy on the affected side is the usual treatment.

Why is gonorrhœa in the female a dangerous disease?

Because it is difficult to eradicate after it has passed the acute stage, and because it may cause endometritis with resulting salpingitis and sterility. To the newborn it is a menace, because it causes ophthalmia neonatorum.

EXAMINATION AND OPERATION

What are frequent causes for gynæcological operations?

Infections, frequently gonorrhœal, causing endometritis and salpingitis; oöphoritis and ectopic pregnancy; cysts and tumors, as ovarian cysts, uterine fibroids and the malignant tumors.

Injuries during childbirth causing laceration of the perineum and cervix uteri and retrodisplacements of the uterus.

Describe the knee-chest position.

In the knee-chest position the patient kneels upon the table or bed, her knees slightly separated, her face turned to one side and resting on a small pillow and the upper chest resting on the bed or table as near as possible to the knees. The thighs should be vertical.

(a) How would you arrange a patient for the Sims' position? (b) When is this position used? (c) What would you do after placing patient in position?

(a) In the Sims', or lateral-prone position (right or left), the patient is placed on her side at the edge of the table—with her lower arm behind her and her upper arm in front and flexed naturally across her chest, thighs flexed upon the body, legs on thighs, upper leg at a less obtuse angle than lower.

(b) This position is used for inspection of the vulva, vagina or cervix, and for local treatment of these parts.

(c) The patient should be draped with a sheet so that the body and legs are covered and only the parts to be examined are exposed.

What is the lithotomy position?

The lithotomy position is the position of a patient flat on his back with legs and thighs flexed and thighs abducted. It is also known as the dorso-sacral position, or posture.

What is the Trendelenburg position?

The Trendelenburg is that position in which the patient is placed flat on her back with body and thighs placed at about an angle of 45° , the legs hanging over the edge of the table. It is used in abdominal surgery so that the intestines may be kept out of the way by gravitation.

(a) Name five gynæcological positions. (b) Name five gynæcological operations and define each.

a. Five positions are:

1. Lithotomy position.
2. Knee-chest position.
3. Trendelenburg position.
4. The dorsal recumbent position.
5. The Sims' or left lateral position.

b. Five operations are:

1. Hysterectomy, removal of uterus.
2. Perineorrhaphy, repair of perineum.
3. Oöphorectomy, removal of ovaries.
4. Salpingectomy, removal of Fallopian tubes.
5. Myomectomy, removal of tumor from uterus.

What is meant by a digital examination?

An examination made with the fingers. In gynæcology the term is usually applied to the manual examination of the pelvic organs through the vagina.

Name three usual methods of examination in gynæcological disorders.

(1) Manual or digital examination by vagina, (2) bimanual examination, (3) inspection with speculum.

How should a nurse prepare a patient for vaginal operation?

The patient should be instructed to void and the bowels should be emptied, if possible, an hour or so before the examination. Corset and any constricting clothing about the waist or abdomen should be removed.

378 STATE BOARD QUESTIONS AND ANSWERS

INSTRUMENTS

Name some of the instruments used in gynæcological examinations.

Graves' bivalve specula.
Ferguson tubular specula.
Sims' specula.
Tenaculum or volsellum.
Uterine sound.
Uterine dressing forceps.
Sponge holders.

Name instruments and dressings used in gynæcological examinations.

The usual instruments are enumerated above. The dressings include $\frac{1}{2}$ dozen sponges, $\frac{1}{2}$ dozen gauze pads, $\frac{1}{2}$ dozen towels, 1 sheet, 1 T binder. Rubber gloves, antiseptic solution, talcum powder and lubricant are also usually required.

Name an instrument used in vaginal inspection.

The Graves' or bivalve, speculum.

In what way should the bivalve speculum be inserted?

The labia should be separated with the fingers of one hand, and the speculum, properly lubricated, should be inserted with the blades turned sidewise until vertical on their longest diameter, and then rotated to the horizontal before opening.

DOUCHES

(a) Of what use are vaginal douches? (b) Name several solutions used in giving douches.

(a) Vaginal douches are used (1) to cleanse, (2) to apply heat and moisture to the vagina and cervix, (3) to medicate and disinfect the vagina and cervix.

(b) Physiological salt solution, solution of boric acid up to 5 per cent., creolin, lysol or carbolic acid, 1 per cent., bichloride of mercury, 1-2000, green soap, 2 per cent., are commonly used douches, the last named for cleansing purposes, the others for disinfection and medication.

Name one douche that the nurse should not assume the responsibility of giving, and why.

The intra-uterine douche should not be given by the nurse on her own responsibility, because of the great danger of intra-uterine or abdominal infection, or of uterine perforation in diseased conditions.

How would you prepare a patient for the giving of an intra-uterine douche?

(1) Place in lithotomy position on douche pan, Kelly pad, or operating table.

(2) Wash off vulva with green soap, shave, wash again and cleanse with 1 to 1000 solution bichloride of mercury.

(3) Douche the vagina with lysol or 1-2000 solution of bichloride of mercury and drape legs and operative field with sterile towels.

Name five precautions to be observed in giving a douche.

(1) To remove discharge from the vulva first and disinfect the hands afterwards.

(2) To have the patient's pelvis higher than her trunk to facilitate flow.

(3) Not to elevate the douche container more than 2 feet above the pelvic level, and to allow the fluid to flow slowly.

(4) The temperature must not be too hot or too cool. 100° F. is the best temperature.

(5) The solutions and instruments must be sterile.

Give (1) position of patient, (2) quantity of solution, (3) pressure and (4) duration of douches to relieve inflammation.

(1) The patient should be in the dorsal position on a padded douche pan.

(2) The quantity should be 2 quarts, at least, unless otherwise ordered.

(3) The douche container should not be elevated more than 2 feet.

(4) The douche should continue for 15 or 20 minutes.

What precautions must be taken when giving a douche after labor?

The douche bag and nozzle should be freshly sterilized, and sterilized water, saline solution, or antiseptics used according to

special order. The nurse should have sterile hands, of wear rubber gloves. She should observe and note any clots or shreds that have come away and also the odor of the discharge.

(a) How would you give a douche after labor? (b) How would you prepare articles used? (c) Hands?

(a) The vulva should be prepared as for an intra-uterine douche.

(b) The douche bag—tubing, nozzle, douche pan, etc., should be boiled. The patient should lie on a sterile towel over the douche pan and be draped with sterile towels. The assembled articles for use should lie on a sterile towel near-by.

(c) The hands should be prepared as for an aseptic operation.

Mention one essential pertaining to (a) the patient, one to (b) the solution and one to (c) the implements used in giving a vaginal douche.

(a) The patient should be in the dorsal position on the douche pan with the pelvis higher than the shoulders.

(b) The solution should be at the prescribed temperature, sterile and not too hot nor too cold—about 110° F. for cleansing, up to 120° F. for medication or treatment.

(c) The douche can and tubing should be clean—sterile if the douche is post-operative or during the puerperium—and the nozzle should always be sterilized previous to use.

Outline the preparation of a douche of 1 gallon of $\frac{1}{4}$ of 1 per cent, lysol solution.

Take of lysol approximately 4 drachms and add this to one gallon of water at a temperate of 100°. Mix carefully in a pitcher and pour into a sterilized douche can with tube and nozzle, being careful to first clamp the rubber outlet tube.

What temperature would you have the fluid in a vaginal douche, (a) for cleansing purposes, (b) to arrest hæmorrhage?

A vaginal douche for cleansing purposes should be given at a temperature of from 100° to 105° F. To arrest hæmorrhage the temperature should range from 110° F to 120° F.

GYNÆCOLOGICAL DISEASES AND
NURSING MEASURES

What is prolapse of the uterus? Give some of its causes.

Prolapse of the uterus is the descent of the uterus into the vaginal cavity or, in extreme cases, the extension of a portion of the uterus through the vulva.

Perineal tears, subinvolution and fibroid tumors of the uterus are among its causes.

Name three causes of amenorrhea.

- (1) Pregnancy.
- (2) The menopause.
- (3) Debilitating illness.

What frequently causes retroversion of the uterus?

Subinvolution of the uterus due to injuries sustained in childbirth.

Define: (a) Fibroid tumor, (b) submucous fibroid, (c) subperitoneal fibroid, (d) interstitial fibroid tumor of the uterus.

(a) A fibroid tumor is a non-malignant new growth occurring in the connective tissue of the uterus.

(b) A submucous fibroid is a fibroid located just beneath the mucous coat.

(c) A subperitoneal fibroid is one lying just below the peritoneal coat.

(d) An interstitial fibroid is one lying within the wall of the uterus.

(a) At what time of life do fibroid tumors usually occur?

(b) What symptoms would lead you to suspect a fibroid tumor of the uterus?

(a) Fibroid tumors occur only during the menstrual era.

(b) Menorrhagia, shortening of the intermenstrual period, anæmia, pelvic pain and leucorrhœa are symptoms of fibroid tumors.

Give some simple procedure for the relief of dysmenorrhœa.

A general hot bath, followed by a hot sitz-bath, or the application of bath towels, wrung out in hot water, to the pelvis and genital region, and the relief of constipation by vegetable cathartics, such as the vegetable cathartic pills.

How are tampons prepared and for what purpose are they used?

Tampons are made of absorbent cotton. Cut into strips three inches wide, roll tightly and tie around the centre with a string of cotton or silk, long enough to reach from the cervix to the outside of the vagina. The tampons are sterilized in the usual manner and medicated.

They are used in the treatment of inflammatory conditions of the pelvic organs.

How are treatments to the vagina and cervix given?

They are given locally, usually as douches, tampons or by direct application of the medicinal substances on cotton applicators.

Describe the technic to be observed in removing tampons.

Disinfect the hands, sponge off the patient's vulva with 1-2000 solution of bichloride of mercury, after placing patient in the dorsal position, seize the protruding string of the tampon and pull gently until it appears. Sponge off the vulva afterward, and check up with patient's chart to see if all tampons have been removed.

(a) How would you sterilize a pessary? (b) For what is a pessary used?

(a) A pessary is best sterilized by immersing in 1 to 1000 solution bichloride of mercury.

(b) Pessaries are used to correct or palliate malpositions of the uterus.

Of what does gynæcological treatment consist?

Of palliative or radical operative treatment applied to the relief of diseases peculiar to the female pelvic organs.

Give a method of obtaining a specimen of pus from the female urethra.

The urinary meatus is washed with an antiseptic solution and carefully dried, the labia are separated and a finger covered with sterile finger-cot placed in the vagina making pressure on the urethra from behind forward until a drop of pus appears at the meatus. This is collected with a sterile platinum loop or a glass rod, the latter is placed in a sterile test tube with the

proximal portion projecting, stoppered with sterile cotton, flamed and sent to the laboratory.

What may be the results of neglect to repair a lacerated cervix and perineum?

(1) Lacerated cervix is frequently the seat of cancer and tends to produce endo-cervicitis and endometritis.

(2) Lacerated perineum tends to grow worse rather than better. Gradual increase in the prolapse occurs, the bladder becomes irritable, the uterus becomes prolapsed, pressure is made on the colon producing obstinate constipation, enteroptosis is produced, and the patient may become a chronic invalid.

What is laceration of the perineum? What causes it?

Laceration of the perineum is a lesion in the fascia and muscle fibres of the levator ani and transversus perinei muscles, caused by childbirth.

State the nursing care to be given a patient for perineorrhaphy, (a) before the operation, (b) after the operation.

(a) The nursing care of a patient prior to perineorrhaphy includes care of the bowels, either a purgative being given the night before or an enema, depending on the surgeon's choice, and also the use of an antiseptic douche, if so ordered by the attending gynæcologist on the evening before or the morning of operation. The patient must be deprived of water or nourishment on the day of operation and the field of operation should be shaved and cleansed, unless the surgeon prefers to have this preparation made under anæsthesia. The nurse should do all in her power to minimize the gravity of the operation in the patient's mind.

(b) The nursing care after operation consists at first of the usual post-anæsthetic care. When the patient has reacted, especial care should be given to the dressings. If they are soiled by fæces or urine they should be changed, the field cleansed with an antiseptic solution, and dried, and sterile dressings reapplied. Care should be taken to see whether the dressings are blood-stained to an unusual degree, and if they are the surgeon should be notified at once. Failure of the patient to urinate should be noted, but catheterization should be done only after the notification of the retention to the surgeon, and upon his order.

Mention two dangers to be guarded against in the after care of a perineorrhaphy.

1. Infection.
2. Rupture of sutures.

What is a recto-vaginal fistula? A vesico-vaginal fistula?

A recto-vaginal fistula is a fistulous tract between the rectum and vagina.

A vesico-vaginal fistula is a fistulous tract between the bladder and vagina.

Name six inflammatory diseases of the female genito-urinary tract, and give the usual treatment of one of them which the nurse may be told to carry out.

(1) Urethritis, (2) cystitis, (3) vaginitis, (4) cervicitis, (5) endometritis, (6) salpingitis.

Cystitis may be treated by irrigations of the bladder with a dilute solution of colloid silver salt or a solution of boric acid.

What are the symptoms of acute gonorrhœal urethritis?

Pain and burning on urination, inflammation of the urethral orifice and purulent discharge from the urethra are symptoms of acute gonorrhœal urethritis.

Give nursing care of a female having gonorrhœa.

In the condition of acute gonorrhœal vulvitis or vaginitis or urethritis, with pain, redness, or swelling, the patient should be kept in bed on a bland, non-irritating diet. The local applications or douches being used, a sterile dressing should be kept over the vulva. The bowels should be kept active with saline purgatives. Great care should be exercised to prevent the patient touching the infected region or the dressings, to prevent infection of the eye. All vessels, bed-pans, linen and other articles coming in contact with the patient should be disinfected, and the personal precautions of the nurse should be as rigid after handling the patient as in typhoid, erysipelas or other infections.

When nursing gonorrhœa patients, what personal care should a nurse take?

To carefully disinfect the hands after touching or handling anything coming in contact with the infected region.

What personal precaution should a nurse take after giving a vaginal douche to a patient suffering from venereal disease?

To disinfect the articles used, the gown worn and afterward the hands.

What would persistent bleeding in a woman 45 to 50 years of age suggest to you and if she confided in you, what advice would you give?

The history would suggest either fibroid tumor or carcinoma, particularly the latter. She should be instructed to consult a competent gynæcologist.

(a) What advice would you give a woman who had an increased menstrual flow at the time of menopause? (b) What condition would you suspect?

(a) To consult a competent gynæcologist or her family physician at once.

(b) Endometritis, or fibroid tumor.

What constitutional disturbances may be expected at the menopause?

Vaso-motor disturbances, mental and nervous manifestations, sometimes even headache, hysteria, etc.

(1) Is cancer found more frequently in the cervix or the body of the uterus? (2) Which is the more dangerous? (3) What is one outstanding symptom common to cervical cancer in women who have passed the menopause?

(1) Found more frequently in the cervix of the uterus.

(2) Cervical cancer is less frequently cured by operation than cancer of the body.

(3) Hæmorrhage from the vagina, or blood-stained mucus.

(a) What may hæmorrhage from the vagina after the menopause indicate? (b) What would you advise?

(a) It probably indicates carcinoma (cancer) of the uterus.

(b) The patient should be examined by a gynæcologist.

If a patient has hæmorrhages at menstrual periods or flow between periods, what conditions would you think of and what would be your advice to such a patient?

Excessive bleeding at or between periods might be due to incomplete abortion, fibroid tumor of the uterus, salpingitis, certain

386 STATE BOARD QUESTIONS AND ANSWERS

ovarian tumors or cancer of the uterus. The patient should be advised to see her physician.

What is a common name for carcinoma?

What is the treatment for carcinoma of the uterus?

Cancer is the common name for carcinoma.

A complete hysterectomy done as early as possible is the treatment for carcinoma of the uterus when the diagnosis is established in the earlier stages; later X-ray or radium.

What are the symptoms of carcinoma of the uterus, and in what period of life does it usually occur?

Carcinoma of the uterus most frequently occurs after the menopause. The appearance of a bloody discharge at irregular periods, especially if accompanied by a bad odor, and occurring after the menstrual function has ceased, would be suggestive of carcinoma of the uterus.

What is first aid to a patient in uterine hæmorrhage pending the arrival of the physician?

In severe uterine hæmorrhage (1) put the patient in bed, removing all constricting clothing, (2) elevate the foot of the bed, (3) apply ice to the pubes and lower abdomen, (4) and endeavor to grasp the fundus of the uterus through the abdominal wall. If a non-gravid uterus, give 20 minims ergotol or pituitrin by hypodermic.

What care regarding nourishment would you give a gynecological patient to prevent a common discomfort?

A common discomfort, especially after operative measures, is constipation accompanied by flatulence. The diet should be bland and non-fermentative and should contain enough residue to stimulate peristalsis. Large amounts of milk should not be given.

Give two nursing methods to relieve tympanites following an abdominal operation.

- (1) The administration of a soapsuds-turpentine enema.
- (2) The application of turpentine stupes.

Outline a treatment for persistent post-operative emesis.

- (1) Give nothing by mouth.

(2) Give normal salt solution with a teaspoonful of sodium bicarbonate to the pint, by rectum.

(3) Wash the stomach.

Mention some attendant symptoms of the menopause indicating medical aid.

Menorrhagia, extreme nervousness, "hot and cold flushes" and severe headache are some of the symptoms which should receive medical aid.

(a) Name three pelvic conditions which may be treated with radium.

(b) When is X-ray used in the treatment of cancer?

(c) What would you consider a danger signal in a patient who was having X-ray treatments for an abdominal or pelvic condition?

(a) Carcinoma of the body of the uterus, carcinoma of the cervix and bleeding uterine fibroids may be treated with radium.

(b) X-ray is used when operation is contraindicated.

(c) Nausea and vomiting would be considered a danger signal in a patient receiving X-ray treatments.

OBSTETRICAL NURSING

DEFINITIONS

Define foetus, multipara.

The foetus is the child in utero from the end of the third month of gestation until birth.

A multipara is a female who has had more than one child.

Define pregnancy, version.

Pregnancy is the condition of being with child.

Version is the turning of the foetus in utero.

Define: agalactia, galactorrhœa, pubiotomy, symphysiotomy.

Agalactia is the absence of milk secretion.

Galactorrhœa is the excessive secretion of milk.

Pubiotomy is the cutting through the pubic bone lateral to the midline.

Symphysiotomy is the division of the fibrocartilage of the symphysis pubis.

Define: extrauterine pregnancy, primipara, puerperal infection.

Extrauterine pregnancy is ectopic gestation. (See "Gynæcological Nursing.")

Primipara is a female who has brought forth her first child.

Puerperal infection is a septic infection of the genital tract occurring after childbirth.

Define: Wharton's jelly, caput succadaneum, secundines.

Wharton's jelly is the jelly-like mucous tissue surrounding the umbilical vessels and constituting the bulk of the umbilical cord, named after Thomas Wharton, an English anatomist.

Caput succadaneum is the swelling formed on the presenting part of the foetus during labor.

Secundines are the placenta and afterbirth.

Define: quickening, lightening.

Quickening is the first recognizable foetal movements in utero.

Lightening is the sensation of decreased abdominal distention produced by the descent of the uterus into the pelvis previous to labor.

What is the pelvimeter? When is its use important?

The pelvimeter is an instrument for measuring the diameters and capacity of the pelvis. Its use is important in contracted pelves.

Define: presentation, precipitate labor.

Presentation means the appearance in labor of some particular part of the foetus at the os uteri.

Precipitate labor is a very rapid labor due to very strong labor pains or to very slight resistance of the soft parts.

What is conception?

Conception is the fertilization of the ovum.

What is the false pelvis? The true pelvis?

The false pelvis is that part of the pelvis above the iliopectineal line, composed of the iliac bones. The true pelvis is that part of the pelvis below the iliopectineal line, composed of sacrum, ischia and the pubic rami.

What is craniotomy?

Craniotomy is the opening of the foetal skull in utero in order to effect delivery.

What is Cæsarean section?

Cæsarean section is the operation in which the pregnant uterus is incised after celiotomy, and its contents removed. There is a tradition that Julius Cæsar was cut from his mother's womb in this way.

What is vernix caseosa? What is amniotic fluid?

Vernix caseosa is the fatty layer of sebum and epithelium which forms a cheesy coating over the foetus after the fifth month. Amniotic fluid is the fluid contained within the most internal membrane surrounding the foetus—the amnion.

Give the size of the virgin uterus and of the uterus at term.

The virgin uterus is about 3 inches long.

The uterus at term varies in length, but may be said to be "about the size of a pumpkin." (Cooke.)

Name the bones that make up the pelvis.

The pelvis is composed of the sacrum and coccyx behind and two innominate bones, each composed respectively of the ilium, ischium and pubis.

Define: os uteri, fontanelles, fundus uteri.

Os uteri is the mouth of the uterus, or the opening in the cervix.

The fontanelles are two non-ossified angular spaces in the infant's skull, the anterior lying between the frontal and two parietal bones, the posterior, a smaller space between the occipital and parietal bones.

Fundus uteri is the rounded upper pole of the uterus.

What is the difference between abortion, miscarriage and premature labor?

Abortion means the expulsion of the foetus during the first three months of pregnancy.

Miscarriage means the expulsion of the foetus between the third and sixth month of pregnancy.

Premature labor means the expulsion of the viable foetus between the sixth month of pregnancy and full term.

By what means does the foetus receive nourishment?

By osmosis between the numerous vessels in the placenta and the blood supply of the pregnant uterus.

Define: (a) mastitis (b) puerperium (c) episiotomy (d) eclampsia (e) gravida (f) phlegmasia alba dolens (g) lactation (h) sprue (i) blue baby.

(a) Inflammation of the breast.

(b) Period following labor until patient is able to be up and about.

(c) Incision of the perineum.

(d) A disease characterized by convulsions occurring during or immediately after pregnancy.

398 STATE BOARD QUESTIONS AND ANSWERS

- (e) Pertaining to pregnant uterus.
- (f) Inflammation of femoral vein in puerperal women.
- (g) Secretion of milk.
- (h) An inflammatory condition of the mouth (thrush) usually accompanied by gastro-intestinal disturbance and diarrhoea.
- (i) An infant suffering from cyanosis.

Define: meconium, colostrum, placenta prævia.

Meconium is the first excrementitious substance passed by the newborn. It is dark brownish-green in color and is passed for a few days after birth.

Colostrum is the watery secretion found in the breasts after the second month of pregnancy and for several days after delivery, before lacteal secretion is established. It contains principally lactalbumin, mineral salts and colostrum corpuscles.

Placenta prævia is the implantation of the placenta in the lower segment of the uterus. It is defined as central, or marginal, as regards its relation to the internal os.

PRENATAL CARE

Outline simple hygienic rules to be followed during pregnancy as regards diet, bathing, care of teeth and bowels.

During pregnancy the diet should be simple and sensible, not differing materially from that under normal conditions, but all food or drink causing indigestion should be excluded. A relatively large proportion of liquids should be taken.

A warm bath with soap should be taken at night twice a week. Cool, but not cold, morning baths are also beneficial, if the patient reacts with a glow. Extremes of hot or cold water are to be avoided in bathing.

The teeth are more susceptible to decay during pregnancy than at other times. The teeth should be brushed after each meal, and the mouth well rinsed after acid eructations or vomiting. A dentist should be consulted early in pregnancy and his advice followed.

Constipation is not uncommon during pregnancy. A bowel movement should be secured once a day. Fruits, raw or cooked, Graham bread, corn bread and corn meal and oatmeal mush are beneficial, as well as most green vegetables. Agar-agar taken with cereal or apple sauce, a tablespoonful daily with or without

mineral oil in addition, is a valuable corrective to constipation. Cascara or senna are also used.

How may a nurse aid in creating a correct mental attitude in a patient as labor approaches?

By suggesting to her that childbearing is a normal function, and by encouraging her to go about her usual tasks and duties, and not to be self-centred. The nurse should also disabuse the patient's mind concerning the many erroneous superstitious beliefs about childbirth which are prevalent even among otherwise intelligent people. This includes the belief that unfulfilled longing for food or slight accidents to the mother will mar the child, or that reaching upward will cause the cord to slip around the unborn child's neck, and similar old wife legends.

What may a nurse do for the relief of varicose veins during pregnancy?

Clothing causing constriction, such as corsets, garters, heavy skirts, etc., should be given up. If the varicosities persist some time should be spent in the recumbent position and a rubber stocking or webbed rubber bandages applied to the affected leg from the ankle to the hips. Constipation should be corrected.

Name two recognized diseases which affect both sexes in which the prenatal diet of the pregnant woman would have to be regulated with unusual care.

Diabetes and nephritis are two conditions which require dietetic treatment and which in the pregnant woman would require an unusual amount of supervision by the physician and coöperation by the patient.

What points should be emphasized in the care of the pregnant woman relative to (a) clothing, (b) exercise, (c) the kidneys?

The clothing should be so made as not to constrict nor drag on the pelvis. A maternity waist or corset without bones may be worn. An abdominal support is beneficial during the later months. Comfortable, well-fitting shoes should be worn, with heels not too high nor narrow. Toward the end of pregnancy larger shoes will be required.

Walking in good weather is valuable exercise, but no exercise should be indulged in to the point of weariness. Two hours

at least should be spent daily in the open air. Any of the not too violent or fatiguing outdoor activities are allowable.

The kidneys should be stimulated by an increased intake of fluid—at least a quart of water a day should be taken. After the third month the urine should be examined at intervals by the attending physician.

State five points in prenatal care which may prevent complications during pregnancy and labor.

(1) Guarding proper kidney function by diet and urinary examination may avoid eclampsia.

(2) Care of the skin by frequent bathing may help elimination and prevent toxæmia.

(3) Induction of good bowel habits by diet and other measures will also assist in minimizing strain on the kidneys.

(4) Proper diet and exercise will tend to prevent toxic vomiting.

(5) Mental hygiene, allaying fears and ill grounded superstitions, will help to prevent neuroses.

Why are frequent examinations of the urine advisable during the prenatal period? What are the dangers of high blood pressure and albuminuria?

Frequent examinations of the urine are important to detect abnormal kidney function. The danger of high blood pressure and albuminuria is eclampsia.

What is the usual position of the foetus in utero?

The head of the foetus is usually midway between flexion and extension, the back is slightly flexed and the arms and legs are freely movable.

PREGNANCY

(a) What is the duration of pregnancy? (b) How would you estimate the probable time of confinement in a given case?

(a) The duration of pregnancy is usually 40 weeks or 280 days.

(b) A simple rule is to count back 3 months from the beginning of the last menstruation, and add 7 days. This will give the approximate date of labor in the following year.

Example: The last menstruation was June 10, 1914. Counting back 3 months gives March 10th. Adding 7 days gives March 17th. Adding 1 year gives March 17th, 1915, the probable date of labor.

How is foetal life maintained in the uterus?

Foetal life is maintained in the uterus through osmosis of blood and oxygen to the foetus, at first through the chorionic villi, and later through the placenta, which exercises a selective action in bringing the necessary food to the growing foetus.

What are the changes in the uterus during pregnancy?

The lining of the uterus becomes more vascular, the walls of the uterus grow thicker and more powerful, the muscle fibres become stronger and increase in number, developing the functions of contractility and retractility to a high degree. It enlarges greatly in size, and the blood-vessels increase in size and number. Corresponding changes take place in the mucosa, forming the spongy mass called the decidua vera and at the site of the placenta the decidua serotina.

Give the signs of pregnancy. (a) Presumptive signs (b) Probable signs. (c) Positive signs.

(a) Cessation of menses.

Change in the breasts.

Morning sickness.

Quickening (movements of foetus in utero).

Discoloration of the mucous membranes.

Disturbances in urination.

(b) Menses still absent.

More marked changes in breasts.

Disappearance or subsidence of gastric and urinary disturbances.

Fundus can be felt above the symphysis pubis.

Cervix is soft.

(c) Uterus very large.

Breast changes more marked.

Foetal heart heard.

Parts of foetus can be palpated.

Foetal movements can be seen.

Positive X-ray findings.

Name some physiological changes which occur during pregnancy.

1. Increase in size of uterus.
2. Breast changes, engorgement, and pigmentation of areolæ.
3. Thinning out of abdominal walls due to stretching.
4. Frequency of urination.
5. Constipation.

(a) What are the earlier signs of pregnancy? (b) What are the first symptoms of labor?

Early signs of pregnancy are:

- (a) (1) Cessation of menstruation.
- (2) Tenderness, prickling, enlargement of the breasts.
- (3) Nausea or vomiting occurring daily, especially on rising.
- (4) Irritability of the bladder.
- (5) A softening of the cervix, discovered by palpation.
- (6) The active or passive movements of the foetus (16th or 18th week).
- (7) The enlargement of the uterus.

(b) The symptoms of labor are a slightly blood-tinged vaginal discharge and slightly intermittent cramp-like pains in the pelvis.

(a) Mention two disorders of pregnancy. (b) Mention two complications that may occur during labor.

(a) Vomiting and constipation are two common disorders of pregnancy.

(b) Eclampsia and placenta prævia are two complications which may occur during labor.

State briefly five points of instruction that you would give to a pregnant woman as regards her care of herself.

To take moderate daily exercise; to eat plenty of nourishing but not heavy foods; to avoid constipation; to keep cheerful and interested, and to select a good doctor and consult him frequently.

How early are the foetal movements observed?

The first foetal movements are observed from the 18th to the 20th week after impregnation.

What diseases would you avoid nursing prior to an obstetrical engagement?

Avoid nursing contagious and infectious diseases.

What organs require careful watching during pregnancy, and why?

The kidneys, because examination of the urine may reveal the toxic condition that may exist in the patient, and the bowels because constipation may place an extra burden on an already overtaxed kidney.

Why is it important that a pregnant woman should consult a physician early?

In order that she may be instructed concerning pre-natal hygiene and to make certain that there are no contraindications to normal pregnancy.

Why is a high meat diet avoided during pregnancy?

A high meat diet places undue strain on the kidneys which already have plenty to do. Any interference with the kidneys may precipitate toxæmia or eclampsia.

What untoward symptoms would you instruct a pregnant woman to report immediately?

Any blood or bloody discharge from vagina, however slight.

Headache, dizziness or spots before eyes.

Swelling of feet or face.

Persistent constipation.

Any undue pain especially around uterus or abdomen.

You are alone with a patient who shows symptoms of a threatened abortion. What would you do?

Put the patient to bed and summon her physician.

What would you tell a mother if asked about maternal impressions?

Inform her that maternal impressions are entirely unfounded and are merely notions of the laity.

Mention a few symptoms of toxæmia of pregnancy. Some preceding eclampsia.

(a) Symptoms of toxæmia—headache, dizziness, cloudiness of mind and vision, dry muddy skin, deficient urination, the urine is high colored and strong, constipation, brown furred tongue, vomiting, etc.

(b) Symptoms preceding eclampsia—the patient has headache, ocular disturbance, spots before the eyes, twitching of the muscles of the face, vomiting, ringing in the ears, high blood-pressure. Sometimes there is a tendency to coma, and at times there is extensive œdema of the feet.

State at least three symptoms by which you would know the urine of a pregnant woman needed medical attention.

- (1) Headache.
- (2) Swelling of extremities.
- (3) Increase in blood pressure.

What articles should a nurse take with her when called to a maternity case in a private home?

In addition to her ordinary supplies, clothing, douche bag, rectal tube, hypodermic, etc., used in any case, the nurse should carry:

Extra aprons.

Extra dresses, preferably with detachable sleeves.

Rubber apron, and sterile dressings.

When time allows the nurse should make needed pads and bandages, which should then be sterilized. Also advise the family to provide the following:

One hundred bichloride of mercury tablets.

Four ounces powdered boric acid.

One bottle of white vaseline.

One pound of Castile soap.

One quart of grain alcohol.

One stiff hand brush.

One douche pan.

One slop jar or covered enamel bucket.

Three pottery or agateware basins, one 16 inches, and two 11 inches in diameter.

Pitchers, at least three, holding 1 quart and upward.

One and one-half yards of rubber sheeting, at least 36 inches wide, or one and one-half yards of white table oilcloth, to protect the mattress.

One 2-quart fountain syringe.

One medicine glass.

One medicine dropper.

One drinking tube.

One infant syringe.

Three abdominal bands, 6 to 8 inches wide and 20 inches long, soft flannel strips, unhemmed, for the baby.

Sterile gauze.

How would you tell an expectant mother in moderate circumstances to prepare for delivery at home?

To choose a bright room, not too far from the bathroom, with, when possible, a communicating room for the nurse and baby. Needless draperies, etc., should be removed. A single metal bed with mattress is desirable. It should be raised about 6 inches by blocks under each post.

If the confinement is to take place at home, the following articles are likely to be needed:

Two to four pounds of absorbent cotton.

One large package of sterile gauze (25 yards).

Four rolls of cotton batting.

Two yards of stout muslin for abdominal binders.

Twelve old towels or diapers.

Two old sheets.

Two yards of bobbin, or very narrow tape, for tying the cord.

Three shirts, size 2, wool and cotton, or wool and silk, not all wool.

Four flannel skirts, "Gertrude" style.

Three nightgowns or wrappers of outing flannel, buttoned in front.

Eight white slips.

Three knit bands, with shoulder straps, part wool.

At least 4 dozen diapers.

Cloak.

Cap.

Carriage blanket of crocheted or knit wool.

Three pairs of socks, if in summer; three pairs of long white merino stockings, if the weather is cold.

An old soft blanket.

Four dozen safety pins of different sizes.

Some old soft towels.

Soft wash cloths.

Hot-water bag, with flannel cover.

Talcum powder.

Castile soap.

Olive oil.

Two ounces of boric acid.

A crib. If desired, a clothes basket makes a good bed. A basket or box that may readily be moved about is a great convenience. The mattress for any sort of a bed may be made from table felting, which, when folded a few times, make a very soft, smooth bed and has the great advantage over the ordinary mattress that it may be washed and boiled in the sun.

Of what articles should the layette consist? (See above question.)

Name four complications of pregnancy.

- (1) Eclampsia.
- (2) Placenta prævia.
- (3) Ectopic gestation.
- (4) Accidental hæmorrhage.

Give three causes of hæmorrhage during pregnancy.

Ectopic pregnancy, placenta prævia and premature separation of the placenta are three causes of hæmorrhage during pregnancy.

Differentiate between "morning sickness" and "pernicious vomiting."

"Morning sickness" is nausea and occasionally vomiting which appears upon arising and subsides as the day passes. This is present in about 50 per cent. pregnant women from about the sixth to the fourteenth week of pregnancy.

"Pernicious vomiting" is persistent severe vomiting in which all food and water are vomited; it is significant of toxæmia.

LABOR

What points would you emphasize in the conduct of a normal case of labor in the absence of the physician?

- (1) Not to examine the patient.
- (2) To wear sterile gloves and gown, after cleaning and sterilizing vulva of patient.
- (3) To drape patient with sterile towels.
- (4) To encourage patient to bear down in the mid stages of labor, and to refrain from bearing down and "pant" when the head reaches the perineum.

(5) To hold back the head with a sterile pad so as to gradually distend the perineum in the latter part of the second stage.

(6) Not to use much force in delivering the shoulders.

(7) To keep a firm grasp on the uterus after delivery.

(8) To clamp the cord and cover it with a sterile dressing, tying it later.

(9) Not to massage the uterus vigorously while it contains the placenta.

(10) Not to make pressure on the fundus in order to expel the placenta until 20 minutes have elapsed.

(11) To clean and dress aseptically any first or second degree perineal tears.

(12) To watch carefully for an hour after the delivery of the placenta for post-partum hæmorrhage.

(13) To tie the cord under aseptic precautions and apply a sterile dressing.

(14) To instil 20 per cent. solution of argyrol in the infant's eyes.

(a) What hypodermic medication is sometimes used to accelerate labor? (b) In what form does this preparation come? (c) What are possible dangers from its use?

(a) Solution of pituitrin is sometimes used to accelerate labor.

(b) It comes in ampoules of 1 c.c. for hypodermic use.

(c) Too forcible pains with injury to the child, or to the uterus, have resulted from its use.

What is the average duration of labor? What is the usual method of predicting the date of onset of labor?

The average duration of labor is about eighteen hours in primiparæ and about twelve hours in multiparæ.

The method of predicting the date of labor is to add seven to the date of the first day of the last menstrual period and count back three months.

Would you be less careful of your surgical technic on an obstetric case than on a case of abdominal section, and why?

No; because conditions favoring infection are almost more abundant in the genital tract of the woman in labor than during the course of an abdominal section.

(a) What antiseptic solution may be needed in the care of the mother? (b) In the care of the new-born infant? (c) What strength?

(a) Solution of bichloride of mercury is usually needed for the mother—I to 2000 to 1 to 5000.

(b) Solution of boric acid, saturated, or 5 to 10 per cent. is used to cleanse the baby's eyes and mouth.

Mention some of the signs and symptoms of approaching labor.

A "sinking down" of the abdomen and symptoms indicative of pressure on the bladder occur, especially in the primipara, in the last weeks of pregnancy. For a day or so slight uterine contractions may be felt, an increased vaginal discharge is observed and a faint tinge of blood is seen; then occur faint, brief, rhythmic contractions of the uterus, the pain being generally felt in the back at first. The intervals between these pains diminish, while their duration and strength gradually increase, until rupture of the bag of waters is accomplished.

What two orifices have to be dilated before the birth of a child is possible?

The cervix of the uterus and the vulva have to be dilated before the birth of a child is possible.

In natural labor what is the presentation?

In normal labor the vertex is the presentation.

Name other presentations.

Arm, breech, brow, face, foot, shoulder.

How would you prepare a patient for labor?

As soon as the first stage of labor commences the patient should have a good cleansing enema. As the second stage begins the patient should be placed in bed on a douche pan or upon a Kelly pad, with knees flexed and thighs well separated. The nurse after scrubbing her hands, including the nails, should shave the vulva, suprapubic region and inner surface of the thighs and rinse with water. After shaving, the vulva and surrounding parts are given a thorough scrubbing by clean hands with green soap and sterile water. Then tincture of iodine, 2% solution of lysol or alcohol and bichloride or biniodide solution is applied accord-

ing to the practice of the physician in charge. After the surrounding areas have been prepared, the labia are separated and the inner surfaces scrubbed, and then flushed by pouring the solution directly between the folds. A dry sterile towel or pad is placed over the vulva; the douche pan is removed (if Kelly pad has been used it is dried and left in place) the back and hips are dried, after which the patient is so draped with a sterile sheet or sterile leggings that only the perineal region is exposed and a sterile towel is slipped under the buttocks.

Of what value to the doctor and patient is a nurse during delivery?

A well trained and intelligent nurse can be of the utmost value by watching symptoms and maintaining a sterile technic.

What is meant by the term "labor"?

The process by which a child is born.

How is labor divided, and what constitutes each stage?

Labor is divided into three stages:

First stage: During the dilatation of the cervix from the first true pain.

Second stage: From the period of full cervical dilatation to the birth of the child.

Third stage: From the birth of the child to the delivery of the placenta and membranes.

Mention four presentations of the foetus. Which is the most common one?

(1) Vertex, (2) face, (3) breech, (4) shoulder. The vertex presentation is the most common one.

What is accomplished in each of the three stages of labor respectively?

First stage: The lower uterine segment becomes thinned out, merges with the cervix and the os dilates to allow the passage of the child's head, which becomes engaged in the birth canal.

Second stage: The strong uterine and abdominal contractions propel the child through the os and the vagina to the perineum, when dilatation of the soft parts of the vulva and perineum takes place and the child is born, the occiput appearing first in normal labors.

410 STATE BOARD QUESTIONS AND ANSWERS

Third stage: The placenta and its membranes are expelled from the uterus, and the uterus contracts down to a compact mass of muscular tissue.

Give three characteristic signs of the beginning of the second stage of labor.

- (1) Anxiety and fretfulness of the patient, with or without nausea.
- (2) Increased length and intensity of pains—"bearing down" pains.
- (3) Rupture of the bag of waters.

Why is an obstetric case given an enema before advanced labor?

An enema is given to empty the lower bowel and thereby have a more aseptic field for delivery. Also it hastens labor.

What marks the end of the second stage of labor? Of the third stage?

The end of the second stage of labor is shown by the birth of the child. The expulsion of the placenta and membranes terminates the third stage.

What are the dangers to be guarded against in a breech presentation?

When the child is small and labor is rapid, traction should never be made on the child's body, as the precipitate labor will favor post-partum hemorrhage.

When the labor is slow, the cord may be pressed upon excessively for a long time by the after-coming head, and asphyxiation of the child may necessitate rapid and forcible delivery.

Give the nurse's duty as soon as the head is born.

Grasp the fundus of the uterus firmly.

How should the uterus feel to the examiner's hand after delivery?

It should feel about the size of a good-sized cocoanut, and very hard, after delivery of placenta.

POST-PARTUM CARE

Describe the post-partum care of the mother.

After delivery the nurse should grasp the fundus of the uterus through the abdominal wall and hold it for at least one hour, gently kneading it when relaxation occurs. The blood and discharges are washed off with 1-2000 bichloride, the Kelly pad slipped out, a clean towel placed over patient, a temporary sterile vulva pad adjusted, and she is covered with a clean sheet.

The pail containing the Kelly pad, soiled articles, placenta, etc., is removed from the room, and the placenta saved for examination, if it has not already been examined.

The patient's nightgown is removed by cutting down the middle in front and a clean one put on, rolling it up behind to prevent soiling from the patient's back. The thighs, back, buttocks and legs are then washed free of blood stains.

The nurse should then scrub her hands, dip them in bichloride and clean the patient's genitals of the matted blood with green soap and sterile water, cutting away the hair when necessary with sterile scissors, followed by bichloride 1 to 2000 until clean. The towel and absorbent pad should then be removed from the bed she occupies. An obstetrical binder is usually worn; the physician's views should determine this. It should be changed when soiled. Vulva pads should be applied and held in place by pinning to binder. They should be removed at least every 4 hours—at first perhaps every 2 hours. When the pad is removed, the labia are separated with sterile hands and the vulva is bathed from above downward with warm sterile water containing green soap, using small pledgets of cotton. The back and buttocks must be frequently cleansed and bathed; the draw sheet must be replaced at least once daily.

If after 8 to 12 hours the patient does not urinate, she should be catheterized, provided other methods are not productive. At the end of the second day a saline laxative is usually given, to be followed, if necessary, by a soapsuds enema. The enema may be used daily thereafter as the physician desires.

The temperature and pulse of mother and child are to be taken every 4 hours during the first week, and morning and night thereafter, and recorded on separate charts.

The diet is usually specified. If not, the following is a safe routine:

412 STATE BOARD QUESTIONS AND ANSWERS

First 48 hours: Milk (one to two pints a day), gruel, soup, tea, toast.

Second 48 hours: Milk toast, poached eggs, porridge, soup, cornstarch, tapioca, wine-jelly, stewed oysters, tea or coffee—1 cup.

Third 48 hours: White meat of chicken, mashed potatoes may be added. After this, gradually return to regular diet.

The child should be put to the breast after the mother has rested some hours from her labor, and thereafter 3 times a day or so. After 48 hours true milk appears. The infant should be then put to the breast every 3 hours, 6, 9, 12, 3, 6, 9 and 2 A.M. Before and after nursing the breast is bathed with tepid water and the nipple cleansed with a solution of boric acid. A breast binder should be applied, with cotton between the breasts and over each nipple. Gentle massage with cocoa-butter and use of the breast pump generally relieve congestion.

The time of getting up is determined by the physician. Usually from a week to 10 days is the period of bed tenancy. Walking and exercise should be undertaken gradually, and walking upstairs should not be allowed for at least 3 weeks.

What are the most important points to be observed in the care of the mother the first forty-eight hours during the post-partum period?

Symptoms of hæmorrhage, non-involution of uterus, eclampsia and infection.

Care of vulva, breasts, bladder and bowels.

Give proper method of applying an abdominal binder.

An abdominal binder is fastened exactly in front with safety pins set closely together. The lower margin should be four inches below the trochanter, the upper margin about the waist line. To make the binder fit closely darts are made at the waist line and below the hips in front with closely-set safety pins. The binder should fit without a wrinkle and be neat in appearance.

How frequently would you change vulva pads? What conditions would you note?

Whenever soiled. At least every 4 hours, and more often if necessary, during the first few days. When removing observe the color, odor, and general appearance of the lochia, as well as the degree of saturation of the pad.

What are some of the most important things to do in the care of perineal stitches?

In the care of perineal stitches the same precautions are needed as in dressing a wound.

Before changing vulva pads, the hands should be thoroughly cleansed and disinfected. Always use sterile vulva pads, and for the first day change pads every three hours. The next four or five days change pads about every four hours. After this, if discharge has lessened, once in six hours should be sufficient. Irrigate the patient from above downward with 1-5000 solution of bichloride frequently, especially after patient has voided or defecated.

How long after confinement should aseptic precautions be continued?

Aseptic precautions should be observed as long as it is necessary to wear vulva pads, usually at least 6 weeks.

What causes after-pains? Do they occur in all puerperal cases?

After-pains are caused by intermittent contractions of the uterus following childbirth. They do not occur in all puerperal cases, and are more likely to be found in the multipara.

(a) Why do you always keep the placenta for the doctor's inspection? (b) How should the soiled dressings and placenta be cared for in the private home?

(a) The placenta is inspected by the doctor in order that he may determine whether any portion of it or its membranes have been left in the uterus.

(b) Soiled dressings and placenta should be placed in a covered pail and afterwards burned in the furnace.

What is the significance of a chill after delivery?

A chill shortly after delivery is a nervous or vasomotor phenomenon in contrast to a chill later in the puerperium which is significant of infection.

Name two principal causes of retention of urine after delivery.

1. Retention may be due to slight trauma during a difficult or instrumental delivery.

4 STATE BOARD QUESTIONS AND ANSWERS

2. Decrease in intra-abdominal pressure may allow larger quantity of urine to accumulate than under ordinary conditions.

What are some of the indications of insanity during the puerperal state?

1. Infection.
2. Auto-intoxication.
3. Instability of nervous system.

(a) What is the lochia? (b) What would you consider as danger signals in connection with it?

(a) The lochia is a profuse vaginal discharge occurring after labor and lasting for a variable period—usually several weeks. After the first few days it is blood-stained—lochia rubra; during the next 3 or 4 days it becomes clear—lochia serosa, and after the 10th day, white—lochia alba.

(b) A sudden cessation of the flow, a putrid odor, or a sudden staining with blood may be considered danger signals.

What condition of lochia would you report to physician?

A foul or putrid odor is always indicative of infection. This should be reported and also when the patient passes clots.

What simple methods could be used to relieve retention of urine in the mother, before resorting to catheterization?

- (1) Give copious amounts of hot fluids by mouth.
- (2) Then place patient on a bed-pan filled with steaming water.
- (3) If no result, pour warm water, while still on pan, over the meatus.
- (4) Let the sound of running water be heard, and place a hot-water bottle over the pubes.

(a) What is the placenta? (b) Describe it. (c) State its functions.

(a) The placenta is a circular fleshy mass, about 8 inches in diameter, one and a half pounds in weight, and 1 inch in thickness at its centre, thinning out at its periphery.

(b) It forms part of the bag of membranes, and may be regarded as a large, thickened area of the sac attached to the uterine wall. It is made up of connective tissue and blood-vessels which throw out loops into the uterine tissue to interlock with similar loops in the uterus, but there is no actual connection or

direct interchange of blood, nutriment passing to the foetus, and waste products from it to the mother, by osmosis. The placenta is attached to the foetus by means of the umbilical cord containing blood-vessels.

(c) The function of the placenta is to provide nutriment for the foetus by extracting it from the circulation of the mother, and to dispose of the metabolic waste products of the foetus through the same channel.

(a) Why would you not give ergot before the placenta was expelled? (b) State the usual dose of ergot.

(a) The uterus might contract so firmly as to prevent the expulsion of the placenta.

(b) 1 drachm of fluid extract of ergot.

What is the chief danger to the mother in the first few hours after labor?

The uterus may not contract, or may relax and thus cause severe or fatal hæmorrhage.

What is the usual length of time for the generative organs to regain their normal size and condition following confinement?

About six weeks is required for the generative organs to regain their normal size and condition following labor. The process is called "involution."

CARE OF THE BREASTS

Describe the care of the nipples before and after nursing.

The breast should be washed with warm water and Castile soap and the nipple then washed with solution of boric acid. This should be done both before and after nursing.

When and how would you massage your patient's breasts?

The breasts are massaged when for any reason a considerable quantity of milk collects in and engorges the lacteal tubules and "cakes" the breast.

The breasts are washed with Castile soap and warm water and anointed with cocoa-butter.

STEP A: Grasp the breast at the periphery, with the fingers widely separated, and draw them toward the nipple, the latter lying in the palm meanwhile.

416 STATE BOARD QUESTIONS AND ANSWERS

STEP B: Place one hand, palm upward, under the caked portion of the breast, and make gentle pressure with the fingers of the other hand, pressing downward toward the supporting hand and also toward the nipple.

STEP C: Press downward toward the chest over any remaining hard areas with the palm, using a rotary motion.

STEP D: Grasp the entire breast in both hands and milk toward the nipple any remaining secretion. The utmost gentleness must prevail in all manipulations.

What measures may be employed to increase the supply of breast milk?

(1) An adequate diet should be provided for the mother, well balanced, and including a quart of milk and enough green vegetables and fruits.

(2) Freedom from physical or mental strain should be obtained if possible, and enough rest taken, especially during the first eight weeks after confinement.

(3) The breasts should be stripped by hand after each nursing by the infant.

(4) No substitution feedings with a bottle should be allowed until at least the third month.

Why is careful inspection and general care of the nipples important?

Because the slightest abrasion may be the portal of entry for an infection causing mastitis, or breast abscess.

(a) What care should a mother's breasts receive if the infant is unable to nurse? (b) What is the usual procedure for drying up the breasts?

(a) The breasts should be pumped by hand or with an electrical pump regularly during the period the infant is unable to nurse.

(b) The best procedure for drying up the breasts is the application of ice bags only.

What are causes and prevention of mastitis?

The causes are lack of cleanliness in the care of the nipples, cracks or fissure in the nipples and caked breasts.

The prevention consists in pre-natal care of the breasts, washing them nightly and anointing them with vaseline; absolute

cleanliness in regard to the breasts and the nurse's hands before putting the baby to the breasts and care of the breasts to prevent "caking" and fissuring.

Mention three symptoms that might indicate mastitis.

- (1) Pain or tension in the breast.
- (2) Chill or chilliness.
- (3) Rise of temperature.

What is the cause of breast infection? What is the nursing treatment of breast infection?

Infection may enter through cracks, fissure or blisters of the nipple. Withhold child from breast, apply a very tight binder and notify doctor. The treatment usually consists of ice applications, kept up constantly for 48 hours.

Give the causes and symptoms of mastitis.

Mastitis is caused most frequently by an infection with a pathogenic organism brought about through a crack or opening in the epithelium over the nipple. It may be also induced by unwise massage of the gland tissue. It is favored by engorgement of the breast and by previously cracked and fissured nipples.

The symptoms are heat, redness and pain in the affected breast, sometimes inaugurated by a slight chill, and accompanied by fever.

Give treatment of breast after birth.

(See "Post-partum Care.")

State best diet you know of for increasing quality and quantity of mother's milk.

The diet should be simple and easily digestible. Any single article of food which does not agree with the mother should be eliminated. The flow of milk is dependent upon the functional capacity of the breast glands, the mental and physical state of the mother and the proper nutrition of the mother. No one fixed diet can be laid down to suit all individuals. Large quantities of tea or coffee, alcoholic beverages and non-nutritious foods and highly seasoned foods, salt fish and salt meats should not be eaten. Prunes, eggs, milk, roasted or broiled meats, potatoes, beets, halibut, cod and other lean fish, custards, plain ice creams, puddings, and most fruits are usually well digested. The

old idea that acid fruits are injurious has no foundation in fact, unless they cause indigestion in the mother.

THE INFANT

What is the nursing care in a case of insufficiency of breast milk?

Stimulate the breasts, force liquids, give a nourishing diet, and in the meantime supplement breast feeding with a modified milk feeding.

Describe the conformation of the cranial bones of an infant.

The cranium is made up of 8 bones joined at the base, but separated at the vertex. The sphenoid, ethmoid and 2 temporal bones form the base of the cranium and are of minor obstetrical importance. The frontal bone lies in front, the occipital bone behind and are joined together by the 2 parietal bones. These bones are separated at birth by membranous intervals called sutures, and the intersections of these sutures are called fontanelles. By means of this flexible formation of the foetal skull, the bones can overlap each other during labor so that the size of the head is somewhat diminished while passing through the pelvis. Of the 5 sutures those of greatest obstetrical importance are the *coronal*, separating the frontal from the two parietal bones; the *lambdoidal*, separating the occipital from the two parietal bones, and the *sagittal*, or "greater suture," beginning at the base of the nose, dividing the frontal bone into two parts, crossing the coronal suture, separating the parietal bones from each other and ending behind at the lambdoidal suture. The *anterior fontanelle*, large and diamond-shaped, is at the intersection of the sagittal and coronal sutures, while the small, triangular *posterior fontanelle* is at the junction of the sagittal with the lambdoidal suture.

What changes take place in an infant's circulation after birth?

In the foetus blood passes to the placenta through the umbilical arteries and back through the umbilical vein. At birth this placental circulation ceases.

The arterial blood passes up the cord through the umbilical vein into the inferior vena cava partly through the ductus venosus and partly by way of the liver. From the vena cava the blood

flows into the right auricle, thence to the left auricle through the foramen ovale, thence to the left ventricle and out through the aorta. The blood flowing to the arms and head passes to the right auricle via the superior vena cava, but does not pass through the foramen ovale, going instead to the lungs and partly again to the aorta via the ductus arteriosus. The blood in the descending aorta passes to the trunk and lower limbs, most of this blood returning via the iliacs to the hypogastrics and to the placenta, and part of it passing back into the inferior vena cava.

When the infant breathes, the expansion of the lungs causes the closure of the foramen ovale, the ductus arteriosus and ductus venosus no longer functionate and the adult type of circulation becomes established.

What is the first care you would give the new-born infant?

Establish respiration, tie the cord, place an aseptic dressing on it and drop solution of argyrol 20 per cent. in the eyes.

What would you do for primary hæmorrhage from the cord?

Place a ligature of cotton tightly about the stump of the cord.

How would you treat the eyes of a newly-born infant?

Wipe them out with saturated solution of boric acid and drop 20 per cent. solution of argyrol in each eye.

What is ophthalmia neonatorum and how prevented?

Ophthalmia neonatorum is an infection of the infant's eye usually due to the gonococcus. It may be prevented by dropping a silver-salt solution in each eye directly after birth—5 per cent. protargol, 20 per cent. argyrol or 2 per cent. silver nitrate solution.

State pulse and temperature of the average new-born babe.

Pulse rate 120 to 140 a minute.

Temperature 98° to 99° F.

Give in detail your care for the first twenty-four hours of a normal newborn.

As the baby is delivered the cord is cut and tied and the nurse takes the child. It is bathed in olive oil to remove the vernix

caseosa and also to prevent undue radiation of heat. The cord is now dusted with a sterile antiseptic powder, dressed with a sterile dressing and an abdominal binder is applied. The mouth, nose, ears and eyes are especially cleansed. The eyes have dropped in them a drop or two of solution of argyrol (10-20 per cent. or silver nitrate 1-2 per cent.). If in a hospital he should be tagged. The baby is now dressed or wrapped in suitable material and placed in a warm bed prepared for him. He is placed upon his right side, usually with a hot water bag to keep him warm. After several hours he is oiled again and washed in warm water and soap to remove vernix caseosa. He is watched carefully throughout the day for any untoward symptoms. His diaper or pad is changed as needed. Nothing need be given by mouth the first twenty-four hours except perhaps about one-half ounce of boiled water every six hours.

(a) How soon after birth would you bathe a baby? (b) How soon give it a tub bath? (c) What temperature?

(a) The baby may be bathed in the lap of a nurse on the day of birth, care being taken that the cord dressing is kept dry.

(b) A tub bath should not be given before the umbilicus has entirely healed.

(c) 95° F. to 100° F.

What do you consider the best food for a newborn baby?
Human milk.

What do you consider the proper time for the infant's daily bath?

It is usually convenient to give the bath before the mid-morning feeding after the bowels have moved.

(a) How often should an infant under one month be given water? (b) How much water would you give a baby five days old?

(a) Water should be given between each feeding.

(b) One-quarter to one-half ounce of water may be given to a baby five days old.

What would you do for an infant whose bowels have not moved in 24 hours?

A small enema may be given.

(a) What is the average weight and height of a new-born child? (b) Name three physical difficulties which may prevent an infant from nursing easily.

(a) The new-born child weights $6\frac{1}{2}$ to $7\frac{1}{2}$ pounds and is 18 to 22 inches in length.

(b) Retracted or undeveloped nipples on the part of the mother, or harelip or cleft palate on the part of the child may prevent the infant from nursing easily.

Describe the routine care of the baby during the first week.

After circulation is established and the cord is dressed the baby is washed with olive oil. After a day or two it may be washed with Castile soap and hot water, changing diapers every hour or two and dusting the baby well with talcum powder. Put the baby to the breast every 4 hours at first; after a milk flow is established every 3 hours. Take temperature morning and evening and give $\frac{1}{2}$ ounce of water between each feeding. A soft flannel band is worn over the cord dressing which must not be disturbed. A shirt, slip, and light flannel skirt and night dress should be worn. The room temperature should not be below 70° F., with plenty of fresh air, but no draughts.

Give the technic of the care of the umbilical cord.

The dressing applied after the obstetrician has cut or clamped the cord, is usually allowed to remain in place. Alcohol is applied to this daily to prevent infection and hasten drying of the tissues. A clean sterile sponge or an alcohol sponge is placed over this and the binder applied. If the dressing comes loose a fresh sterile piece of gauze saturated in alcohol should be applied. The utmost exactness of surgical technic should be employed in caring for the cord until it has separated.

Name five points to keep in mind when changing a diaper.

- (1) To use only thoroughly washed and boiled diapers.
- (2) To cleanse the buttocks thoroughly with oil or water.
- (3) To powder buttocks liberally and apply a soothing ointment if chafing is present.
- (4) To put the diaper on smoothly and without wrinkles.
- (5) To be careful not to injure the infant's skin while pinning on the diaper.

Through what three avenues are infants peculiarly liable to infection?

Through the eye and throat, the umbilicus and the skin.

How would you determine whether or not an infant was thriving?

By weighing on a proper scale to determine whether it gained 5 to 7 ounces weekly, after the usual initial loss of the first week of life.

Describe the normal stools of an infant during the first week of life.

For the first 3 or 4 days they consist of meconium, greenish-black or brown in color, and made up of intestinal detritus and mucus. When milk flow is established the stools become light yellow in color, loose and glistening in appearance, with a characteristic sour-milk odor.

What is the name of the first intestinal discharge of the new-born?

The first intestinal discharge of the new-born is called meconium.

Why is crying necessary for an infant immediately after birth?

Crying is necessary to produce positive pressure in the lungs and close the foramen ovale, so that the circulation may be changed from the foetal to the normal type, and the alveoli of the lungs distended.

What would cause asphyxia neonatorum and what could a nurse do in such a case?

Aspiration of mucus or amniotic fluid, or intracranial hæmorrhage. The nurse could either wipe out the mouth or pharynx with gauze wrapped around her finger or use a catheter or aspirator and aspirate offending material from the infant's throat. In intracranial hæmorrhage the infant should be kept very quiet and not handled at all.

Name two things you consider of great importance in the care of the new-born.

The ligation and dressing of the cord under aseptic precautions and the prophylactic treatment of the eyes with argyrol 20 per cent., or its equivalent.

(a) How often would you put an infant to the breast during the first week? (b) How long should it nurse?

(a) The infant should be put to the breast every 3 hours during the first week.

(b) It should nurse not longer than 20 minutes.

Give treatment of (a) infants' swollen breasts. (b) Give care of the cord.

(a) The swollen breast, of the new-born, due to secretion of the mammary gland, is treated by the application of warm camphorated oil, a cotton compress and a binder. Massage should not be used.

(b) The cord, being cut between clamps, a ligature is tied about one inch from the navel, using sterile tape about $1/12$ inch wide. The cord is then severed outside this and tincture of iodine applied to the cut surface. A dressing of sterile gauze is now wrapped around it, the binder applied and the dressing is left undisturbed until the stump has healed at the umbilicus. If the cord is very slow in drying and falling off, alcohol may be applied to it.

How would you care for a prematurely born baby without an incubator?

The prematurely born child should be anointed with warm olive oil and wrapped in cotton very promptly. The cord should be tied with especial care. A quilted cotton garment should be provided for permanent wear and the infant placed in a well-padded clothes basket surrounded with hot-water bottles. Wrapped in the blanket nearest the infant should be a bath thermometer and the temperature of the basket should be kept not below 90° F. If possible, the basket should be placed in a well-ventilated, darkened room, with a temperature maintained not below 88° F. The baby should not be handled, not even bathed, for the first few days, and then only for cleanliness when necessary. The cotton garment should be changed twice a day and the fresh one should be well warmed. Rest and freedom from handling is absolutely necessary. The baby should be fed with a medicine dropper, or a feeder, with breast milk, extracted from the mother's breast by pumping. Only 1 or 2 drachms should be given at a feeding, and feedings should be given every hour at first.

If breast milk is not available, a modified cow's milk, low in fat and sugar percentages, should be used.

Is jaundice of the new-born an unusual or serious condition?

No; it occurs very frequently and is not serious unless it persists beyond the first week.

What is meant by hæmorrhage of the new-born?

A condition of spontaneous bleeding from the alimentary tract, the cord or the mucous surfaces.

What is the most frequent cause of convulsive twitchings and cyanosis in the infant appearing about the second or third day after even normal delivery?

Convulsive twitching and cyanosis appearing on the second or third day are caused by slowly progressing intracranial hæmorrhage sometimes due to a hæmorrhagic tendency.

What unusual symptoms would you look for in the new-born?

Convulsions, cyanosis or extreme pallor, vomiting, hæmorrhage from cord, mouth or bowels, purulent discharge from eyes, and inability to nurse, void or defecate.

COMPLICATIONS OF LABOR AND PUERPERIUM

(a) What do you understand by laceration of the perineum? (b) How is it produced?

(a) Laceration of the perineum is a tear in the perineal body and also in the levator ani and other muscles and fascia which support the pelvic floor.

(b) It is produced by trauma of childbirth.

In the absence of a physician, what would you do in a case of post-partum hæmorrhage?

Grasp the fundus of the uterus with the hand through the abdominal wall and knead it vigorously to stimulate contractions. Give about 15 minims of ergotole or some soluble ergot preparation, or ten minims of pituitrin, by hypo. If bleeding does not stop, apply ice to abdomen, and have a sterile douche of normal salt solution prepared and administered while an assistant holds

the uterus. In desperate cases the uterus may be packed with sterile gauze, or a sterile glove put on the hand, the closed fist passed up into the uterus and counter-pressure made with the other hand outside till the physician arrives.

In the absence of a physician, what would you do in a case of eclampsia?

Let the patient lie where she is, only moving her sufficiently to make her comfortable. Insist upon absolute quiet. Remove all clothing, cutting it off when necessary, and wrap the entire body, arms and legs separately, in hot, wet blankets, covering her with dry blankets. Empty the bladder with catheter and administer 2 drops of croton oil mixed with 10 of sweet oil, dropping it on the base of the tongue. If the patient can swallow, give a saturated solution of Rochelle salt in dessert-spoonful doses every 15 minutes till the bowels move freely.

When the convulsion ceases, insist on absolute quiet in the room. As many physicians do not approve of the use of chloroform in this condition, do not use it without authority. Secure medical aid as soon as possible. If the convulsions result in the birth of the child, and the latter is alive, tie the cord at once, and keep a hand on the fundus of the uterus to prevent hæmorrhage.

Name five obstetrical operations.

1. High forceps.
2. Cæsarean section.
3. Version.
4. Induction of premature labor.
5. Extraction in breech presentation.

What symptoms, other than excessive discharge of blood, would suggest post-partum hæmorrhage?

Rapid, feeble, compressible pulse, pallor, sighing, faintness, and disturbed vision would indicate the post-partum hæmorrhage.

Name the different varieties of hæmorrhages occurring in pregnant women.

Apparent.—Menstruation, occasionally occurring for the first 3 months during normal pregnancy, or as a symptom of ectopic gestation. Unavoidable hæmorrhage—that due to placenta prævia.

Accidental hæmorrhage—that due to premature separation of a normally implanted placenta.

Concealed.—Accidental hæmorrhage when the uterus bleeds into itself. Rupture of an ectopic gestation sac—when the sac bleeds into the abdominal cavity.

If a patient cannot void urine 12 hours after labor, what measures would you use before passing the catheter?

- (1) Let her hear the sound of dripping or running water.
- (2) Pour warm sterile water over the vulva.
- (3) Place patient on a bed-pan containing hot water.
- (4) Leave patient alone in the room for awhile.

What is your attitude in regard to catheterization?

Catheterization, even under the most favorable conditions, may cause cystitis, so every other means to induce a patient to urinate should be exhausted before resorting to it.

Mention a condition following childbirth or a hysterectomy that might predispose toward the development of cystitis. Give preventive measures.

Catheterization with improper aseptic technic in a bladder distended excessively would favor cystitis in the above-mentioned conditions. Preventive measures would consist in using the approved measures for inducing voluntary urination, and when these fail, catheterizing under proper aseptic precautions before the expiration of 12 hours.

(a) Why is prolapse of the cord dangerous? (b) What should the nurse do in such an emergency pending the physician's arrival?

(a) Prolapse of the cord is dangerous because pressure on it may cause the foetus to be deprived of its oxygen.

(b) The nurse should place the patient in the Trendelenburg position, and, wearing sterile gloves, should endeavor to push the cord far enough into the birth canal to relieve pressure on it, if the physician does not arrive.

What complications might occur during the puerperal period?

Post-partum hæmorrhage.

Puerperal infection.

Eclampsia.

Name some of the common sources of puerperal infection.

1. Infection from without. Organisms are carried by physicians and nurses or by patient herself, or are present on vulva and are carried in by sterile glove or instruments.

2. Infection from within the body previous to onset of labor, such as endocervicitis, infected teeth, tonsils or other focus of infection.

Define puerperal sepsis. Give causes and symptoms.

Puerperal sepsis is "childbed fever," an invasion of the genital tract after delivery with pathogenic organisms.

The causes are decreased resistance to infection on the part of the mother, and a break in the aseptic technic on the part of the attendants.

The symptoms are chills, fever of the septic type, tenderness in the abdomen, cessation of lochial discharge, or a lochia scanty and dark colored, coated tongue, sometimes delirium.

When does puerperal sepsis usually develop?

Between the third and seventh days after delivery.

Why is the puerperal state one of peculiar liability to infection?

Because of the large area of venous sinuses filled with clotted blood in the uterus affording ideal conditions for growth of bacteria, and the exhaustion of the patient's resistance in the course of labor.

State a few symptoms of eclampsia.

Premonitory headache, œdema, nausea or vomiting, double vision, active dizziness, unconsciousness, pallor, cyanosis, rigidity, frothing at mouth, twitching and coma, the latter lasting a few minutes, and a return of consciousness for a variable period.

Describe the nursing care of eclampsia as concerns: (a) quiet, (b) nourishment, (c) elimination.

(a) The patient should be kept free from noise, light or unnecessary handling.

(b) Practically no nourishment should be given in the convulsive stage even if the patient can swallow.

(c) The bladder should be emptied and bowel movements

secured by croton oil and salines, if possible. Hot packs should be used to stimulate the skin.

What is the prognosis for the mother in eclampsia? For the baby?

The prognosis for the mother in eclampsia is about 20 per cent. mortality and from 30-40 per cent. mortality for the baby.

What is the aim of treatment in eclampsia?

To eliminate toxins from the body by every possible channel of elimination, kidneys, skin, bowels, even by venesection.

(a) Give two important complications that may occur during pregnancy (b) two during labor and (c) one during the puerperium.

(a) Eclampsia, placenta prævia.

(b) Inversion of uterus, prolapse of umbilical cord.

(c) Post-partum hæmorrhage.

Why is placenta prævia a serious condition?

Placenta prævia is serious because the maternal mortality is about 40 per cent, and baby death rate about 66 per cent.

Name the fistulous openings that sometime occur as a result of childbirth.

Vesico-vaginal.

Recto-vaginal.

what are Rickets - symptoms

Rickets may be defined as a chronic nutritional disease disturbing the bones, muscles & whole nervous system is of type

1. Sweating of head, broad squarish head & vessels in frontal region
2. enlarged epiphyses of the long bones.

3. Flaring ribs. distended abdomen

enlarged teeth

blurred picture & walking

PÆDIATRIC NURSING

DEFINITIONS

Define pædiatrics.

Pædiatrics is a branch of medicine which deals with the nutrition, growth, and diseases of the child.

(a) What type of disease is most common in the first three years of life? (b) Between the ages of three and twelve years?

(a) The most common type of disease in the first three years of life is the digestive and nutritional type.

(b) Between the ages of three and twelve years the contagious diseases are the most frequent type to be seen.

Why is birth registration necessary?

Birth registration is necessary because:

1. Infant mortality statistics are based on the number of recorded live births and cannot be accurate if the birth reports are not complete.

2. A birth certificate is an important legal document, necessary sometimes to establish identity in seeking an inheritance, or to obtain a passport to a foreign country, to establish nationality and right to vote in your own country and in many other ways.

Why is the pre-school period an important one?

The pre-school period is frequently a neglected period of life, yet at this time the child's habits, good or bad, are formed, his bony skeleton grows rapidly and diseases of nutrition and metabolism, such as rickets, may produce deformities. The deciduous teeth are very liable to decay unless cared for, and neglect at this period may cause deformity of the palatal arch and malocclusion which may continue throughout life. Susceptibility to contagious diseases is high and exposure to such diseases is increased during the pre-school period.

Name two congenital deformities and tell what each consists of.

Two congenital deformities are club foot and hydrocephalus.

Club foot consists of a twisting of the foot of the infant together, usually, with a retraction of the heel so that the foot is directed downward from the heel to the toes.

Hydrocephalus is an enlargement of the skull, caused by the accumulation in the ventricles, or elsewhere, of an excess of fluid. This is most frequently caused by an obstruction in the aqueduct of sylvius.

What is Pott's disease? What is coxalgia? What is rickets?

Pott's disease is tuberculosis of one or more of the vertebræ.

Coxalgia is pain in the hip joint, but is used restrictedly to specify tuberculous arthritis of the hip.

Rickets is disease of the mineral metabolism of children's bones in which there is disturbance of the calcifying and ossifying process, with resulting deformities of the long bones, visceral lesions, prominent abdomen and muscular weakness.

Define: congenital, tenesmus, entero-colitis, chorea, parotitis, orthopædic, ophthalmia.

Congenital means of pre-natal origin.

Tenesmus means a sensation of straining and burning in the anus and a desire to go to stool with little or no result.

Entero-colitis is an inflammation of a catarrhal type of the mucous membrane of the large and small intestines.

Chorea is a convulsive disease characterized by irregular or involuntary movements of the limbs or of groups of muscles.

Parotitis is an inflammation of the parotid gland. Epidemic parotitis is mumps.

Orthopædic, a term applied to the branch of surgery which deals with the correction of deformities.

Ophthalmia, an acute inflammatory condition of the conjunctiva due to an infection.

(a) Define otitis media (b) Harrison's groove (c) spina bifida (d) myringotomy (e) hypospadias (f) tetany (g) atelectasis (h) acidosis (i) scoliosis (j) inflammation (k) foreign body.

(a) Inflammation of the middle ear.

(b) Groove on the thorax caused by the pull of the diaphragm on the anterior chest wall of an infant suffering with rickets.

(c) Congenital deficiency of posterior portion of the vertebral column.

(d) Incision of the tympanic membrane.

(e) Congenital opening of urethra in under side of penis or into vagina.

(f) A disease characterized by painful tonic and symmetrical spasm of the muscles of the extremities. It is generally considered to be due to disordered calcium metabolism.

(g) Imperfect expansion or partial collapse of lungs at birth.

(h) A reduction of the alkaline reserve in the blood with grave symptoms and frequently fatal termination.

(i) Lateral curvature of the spine.

(j) Tissue reaction to injury with one or more symptoms of pain, swelling, heat and redness.

(k) Any substance in a place within the body where it does not belong.

Give the common names for the following: (a) chorea (b) scabies (c) tetanus (d) strabismus.

(a) Chorea—St. Vitus' dance.

(b) Scabies—itch.

(c) Tetanus—lock jaw.

(d) Strabismus—cross eyes.

Name five congenital defects.

Five congenital defects are club foot, cleft palate, harelip, umbilical hernia and hydrocephalus.

Give two good reasons why one from the age of five years and on should go at least once a year to a registered dentist.

That the first teeth may be filled if they decay, leaving room for the roots of the second teeth to form properly, and to watch the new teeth, rectify cavities and crooked growth.

How does the Child Welfare Department help in the care of children?

It teaches parents that it is better to keep the child well than to try to cure it when ill.

What is meant by Child Hygiene?

By Child Hygiene is meant the program of education for parents, teachers and nurses in the proper nutrition and mental and physical development of infants and children.

What are important factors in causation of diseases of infancy?

Important factors in causation of diseases of infancy are impure milk and improper feeding methods and respiratory infections.

At what season of the year is infant mortality highest, and why?

Infant mortality is highest during the warm summer months, because heat and humidity lower the infant's tolerance for food and likewise favor bacterial growth in the milk supply.

This may be lessened, or prevented, by clothing the infant lightly, bathing him frequently, giving him much fresh air, boiling or pasteurizing the milk and feeding less than the actual average requirement, or keeping him on the breast.

What are the chief causes of infant mortality?

Dirty milk, improper hygienic surroundings and exposure to contagious diseases in other children are the chief causes of infant mortality.

Mention three chief causes of death among babies under one year of age; between one and two years of age?

Three chief causes of death among infants under one year of age, are birth injuries, prematurity, and digestive diseases. Three chief causes of death among babies between one and two years of age are digestive diseases, broncho-pneumonia and infectious diseases.

THE NEW-BORN**State the average capacity of an infant's stomach at birth. Why is regularity of feeding important?**

The average capacity of an infant's stomach at birth is one ounce. Regularity of feeding is important in order that the stomach may be systematically and uniformly distended, a condition necessary to its development.

What quantity of food may be given to a new-born infant?

One and one-half ounces may be given to a new-born infant at each feeding, allowing him to take as much as he will of this quantity.

What methods may be employed to feed a premature or very weak infant who will not nurse?

A premature or very weak infant may be fed by means of a medicine dropper, by the special feeder designed for this purpose and shaped like a large medicine dropper, or by gavage.

Name three parts of the new-born child that are extremely susceptible to infection.

The umbilical cord, the eyes and the skin of a new-born child are very susceptible to infection.

What are the three most important things to be remembered in the care of a premature infant?

1. To give proper nourishment.
2. To maintain body temperature.
3. To prevent infection.

DEVELOPMENT AND TEETHING

Name five factors which contribute to proper growth and nutrition.

1. Proper development of the thymus and thyroid glands.
2. Absence of disease in the child.
3. A proper choice of food materials.
4. A proper amount of nutritive material and vitamins in the food.
5. A proper amount of exercise and exposure to sunlight.

At what age is a child able to sit alone, creep, stand, walk, talk?

The average child sits alone at seven months, creeps at seven or eight months, stands at ten to eleven months, walks at twelve to fourteen months, and really talks at about two years.

Name two causes of retarded growth.

Lack of thyroid secretion may cause retarded growth, though disease and malnutrition are more frequently found causes.

How often should an infant be weighed?

Once a week.

How often should an infant be taken to a physician?

At least every four weeks, preferably every two weeks.

What is the average normal weight at birth and the rate of increase for the first year?

The normal weight at birth is 6.5 to 8.5 pounds. About 7 pounds is the average. Boys usually weigh more than girls. The average infant will double its weight in 5 or 6 months and treble it in 15 or 16 months. During the first 5 months the infant will gain 5 to 7 ounces a week. From the 6th to the 12th month the child will gain $2\frac{1}{2}$ to $4\frac{1}{2}$ ounces a week.

In the different periods of a child's life give the age customary to designate: new-born, infant, child, youth.

New-born, the first week of life.

Infant, up to $2\frac{1}{2}$ or 3 years.

Child, from 3 years up to 13 or 14 years.

Youth, from 13 or 14 to 25.

What is the average length at birth and about how much should a child grow during the first year?

The new-born male child at birth measures about 20 inches, the female child about $\frac{1}{2}$ an inch less. During the first year the increase is about 8 inches.

How many milk teeth are there? When do they usually appear?

There are 20 "milk teeth."

2 lower central incisors, 6 to 9 months.

4 upper incisors, 8 to 12 months.

4 1st molars and 2 lateral incisors, 12 to 15 months.

4 canines, 18 to 24 months.

4 2nd molars, 24 to 30 months.

How many permanent teeth are there? When do they appear?

There are 32 permanent teeth. They appear between the ages of 5 and 7, excepting the four last molars, which come in early adult life at about 18.

At about what age does infancy end? Childhood?

Infancy ends at $2\frac{1}{2}$ or 3 years. Childhood ends at 13 or 14, or as soon as puberty is established.

What are Hutchinson's teeth?

Peg-shaped teeth, with a saw-like, crescentic shape to the central incisors, occurring in the permanent teeth and indicative of congenital syphilis.

Give the time when each fontanelle is closed.

The posterior fontanelle closes at the third month; the anterior fontanelle closes at the eighteenth month.

What is the average amount of phosphorus in the blood serum of the normal growing child?

About 5 milligrams of phosphorus are found normally in 100 c.c. of blood serum of the normal growing child.

How soon should a child be taught to use a tooth brush?

As soon as the temporary teeth have arrived.

FEEDING

What is the best food for babies?

The best food for babies is human milk.

What instructions would you give the mother in regard to the care and feeding of the new infant?

(See following questions.)

At what age should a baby be weaned? Why?

A baby should be weaned when a year old, because at this time the mother's milk does not contain enough nutritive elements or mineral salts to supply the needs of the growing child.

What conditions would indicate the propriety of weaning sooner?

Acute infectious diseases (scarlet fever, typhoid, etc.), chronic infectious diseases (tuberculosis, syphilis), wasting diseases (as diabetes, pernicious anæmia), pregnancy, or the presence of blood or pus in the mother's milk call for immediate weaning. If the child is fretful and suffers from malnutrition, with green stools, and the condition does not yield to dietetic treatment on the part

of the mother, mixed feeding should be instituted and the infant gradually weaned.

What do you mean by the modification of milk?

The dilution of cow's milk with water or cereal gruels and the addition to it of sugar, so that it may more closely approximate mother's milk in the percentage of its constituents and its digestibility by the infant.

Outline a scheme of infant-feeding, using whole milk.

For the new-born use 1 part of whole milk, boiled, to two parts of water. Offer the baby 2 ounces of this every 3 hours, 7 feedings in 24 hours. At the end of the first week add $\frac{1}{4}$ of an ounce of sugar, at the end of the second week $\frac{1}{2}$ an ounce. Increase the quantity offered to 3 ounces at a feeding. At the end of the third week use equal parts of milk and water and use 1 ounce of sugar. At the end of the first month feed $1\frac{1}{2}$ ounces of milk to each pound of the child's weight in estimating the 24-hour formula. This may be gradually increased to 2 ounces per pound of weight.

To obtain the total quantity of the mixture, multiply the amount at each feeding by the number of feedings. From the second to the sixth month the infant fed every 3 hours may take his age in months plus 1 or $1\frac{1}{2}$ in ounces at each feeding—perhaps a little more than this in the early months. Infants weighing 12 pounds or less will require 1 ounce of sugar. Those weighing more than 12 pounds will require proportionately more sugar. For example, a baby 3 months old weighs 10 pounds. $10 \times 1\frac{1}{2} = 15$ ounces of milk. $3 + 1 = 4$ ounces, at a feeding. $7 \text{ feedings} \times 4 = 28$ ounces—total quantity. Water $(28 - 15)$ 13 ounces is added to milk 15 ounces. Sugar 1 ounce is required. Babies after 6 months will require 7 to 8 ounces at a feeding.

Write a formula for a two-months-old infant weighing ten pounds, which contains approximately 30% fat, 2.5% protein and 6% sugar.

A two-months-old baby fed every 4 hours would require 5 feedings and take 5 ounces at a feeding. The formula would be as follows:

Milk	18 ounces
Milk sugar	$\frac{3}{4}$ of an ounce
Boiled water	7 ounces

Define certified, pasteurized, sterilized milk.

Certified milk is a milk the purity of which is attested to by special examinations, made by competent authorities having no interest in its sale.

Pasteurized milk is milk heated for 20 minutes to from 60° to 70° C. (140° to 158° F.) and then quickly cooled.

Sterilized milk is milk heated to 120° C. (248° F.) so as to destroy all living organisms, or boiled for 45 minutes.

What are some advantages and some disadvantages of pasteurized milk as a food for infants?

Advantages: It is, when properly kept, free from pathogenic organisms.

It furnishes a safe milk at a relatively low price.

It will not become sour if kept at a reasonably low temperature.

Its chemical composition and taste undergo little alteration.

Disadvantages: It is said by some authorities to favor the production of scurvy.

It enables unscrupulous dealers to preserve dirty or stale milk.

When improperly kept it may generate poisonous putrefactive organisms, with practically no change in its taste.

What may be substituted for cow's milk when vomiting persists in an infant?

Cereal decoctions such as barley water may be given in small quantities, though a rest of several hours, in which nothing is given excepting teaspoonful doses of water containing a little bicarbonate of soda, should first intervene. When milk is again given (1) it should be skimmed, (2) it should be boiled, and (3) it should contain 1 grain of bicarbonate or citrate of soda to each ounce of milk in the mixture.

If called upon to give a bottle to a new-born baby, how much would you put in the bottle?

The new-born baby needs no actual food for a day or two. Boiled water may be given, however, and an ounce may be offered in a bottle, allowing him to take what he will.

What are three essentials in caring for bottle-fed babies?

(1) That the bottles and nipples have been sterilized.

(2) That the milk is either clean raw milk or pasteurized milk.

(3) That the modification is suited to the age, weight and individual peculiarities of the infant.

If the food is defective in quality, how would you expect it to affect the child?

If the food is poor in quality, or caloric value, the child will either lose, or remain stationary in weight, and will manifest symptoms of hunger.

Would you advise the use of a thermos bottle for keeping the infant's milk hot?

Yes, for short periods. If for a long period, no. The warm milk would act as an excellent culture media for bacteria.

Why should a baby never be left alone to nurse from a bottle?

A baby should not be left alone to nurse from a bottle because unless the bottle is properly tilted and held in that position, the infant may keep on sucking air instead of milk and have colic as a result. Or the bottle may fall away from him and be nursed intermittently later when the milk is cold. Or he may contract the habit of lying for a long time with the nipple in his mouth and not nursing steadily.

What indications would assure you that a baby was receiving a proper diet?

A normal baby receiving a proper diet will be well nourished, making the average gain for his weight and age each week, will be hungry before his feeding time, but not fretful at other times, and will sleep a proper amount and be playful when awake. His stools will exhibit normal characteristics, though constipation in artificially fed babies is not uncommon.

What are very important points to be observed in caring for a child with a tendency toward marasmus?

A child with a tendency toward marasmus, or chronic malnutrition, should not be fed with mixtures containing more than half the cream percentages used for normal children. They should be carefully guarded against draughts and dampness or chilling winds, and under no circumstances be allowed to come in contact with any one suffering from a "cold," since they are peculiarly susceptible to respiratory infections. They should be in the open

air as much as possible. As there is considerable intestinal atony, the bowels may require aid from mild cathartics or enemata.

(a) What is malnutrition; (b) Give four objective symptoms and some nursing details of a child 4 years old suffering from malnutrition?

(a) Malnutrition is a condition brought about through improper or insufficient food, or inadequate digestion or absorption, in which the body tissues lose tonicity and the body suffers for heat and energy, and the individual either does not gain or loses in weight.

It is manifested by a deviation above 10 per cent. from the normal age-weight-height tables of infants and children such as the Baldwin-Wood tables. There may be few noticeable symptoms in malnutrition of minor degree. (b) In advanced malnutrition the following will be noticed in a 4-year-old child:

- (a) Noticeable thinness of the body,
- (b) Flabby skin, wrinkling when pinched,
- (c) A noticeable pallor,
- (d) A slouching posture with hollow back.

Give three requirements for a proper substitute for mother's milk.

A proper substitute for mother's milk should (1) be bacteriologically clean, (2) be capable of assimilation and of digestion by the infant, (3) contain a sufficient amount of vitamins and nourishment to keep the child in a good state of nutrition.

In what way may the prolonged use of predigested foods affect the young child?

Prolonged use of predigested foods may cause a lack of development of the digestive organs, especially the stomach, both organically and functionally.

At what age should the normal infant be able to take whole milk?

Usually at about the ninth or tenth month.

At what age should an infant be given orange juice?

Orange juice in small quantities should be given at the second or third month of life.

Why is it necessary to give an infant who is fed on pasteurized milk or patent foods either tomato juice or orange juice?

Patent foods and pasteurized milk are at least partly deficient in the amount of vitamin C which is necessary to protect the child against scurvy. Tomato and orange juice are rich in vitamin C, and when added to a diet lacking in this vitamin will prevent the occurrence of scurvy.

Why is it necessary to give an infant water?

The average infant requires from one-sixth to one-fifth of its body weight in fluid each twenty-four hours. If insufficient water is given, the concentration of body fluids becomes too great and may cause illness. This is especially marked in the newborn child and in the first week of life fever may occur as a result of lack of water.

Describe three or more symptoms which would lead you to think the mother's milk was not nourishing her babe.

- (1) Loss of weight or failure to gain.
- (2) Constipation or scanty stools or thin, green discharges.
- (3) Crying for an hour or more before feeding,
- (4) Particularly if the baby refuses to nurse after a short time at the breast.

What is marasmus?

Marasmus is a general and progressive deterioration of the vital forces accompanied by wasting and atrophy of the body tissues. It is seen most frequently in children as a terminal condition in chronic malnutrition.

How would you prepare and keep bottles and nipples for artificial feeding?

There should be as many bottles and nipples in commission as there are feedings in the 24 hours, so that no bottle will be used more than once in any day.

As soon as a nipple has been used it should be washed thoroughly inside and out with Castile soap and water, a needle passed through its orifice to push out any curd, and then placed in a cup containing saturated solution of boric acid. Once daily all nipples are boiled for 15 minutes.

Bottles should be so made as to be easily cleanable with a

brush. After each feeding the bottle is washed with Castile soap and hot water and wiped out with the brush. It is then rinsed with fresh water and placed on end to drain. Once in 24 hours all the bottles are boiled. To boil, fill them with cold water and bring it to a boil. After boiling 15 minutes the vessel is taken from the fire and the water allowed to cool until the bottles can be removed without burning the hand.

State the necessary constituents usually added to make cow's milk replace mother's milk.

Water and sugar and some form of alkali, as lime water or a small quantity of sodium bicarbonate, or sometimes an acid, as lactic acid, are added to cow's milk or cream when modifying it so as to replace mother's milk.

Of what value are fruits and green vegetables in children's diet?

(a) Green vegetables furnish roughage, contribute vitamin A and B, especially, contain varying quantities of mineral salts, as iron, potassium, sodium and calcium, and have a certain nutritional value, containing as they do, 5 to 10 per cent. carbohydrates.

(b) Fruits contain sugar, furnish roughage, and contribute quantities of vitamin C, especially in citrus fruits. Many fruits also contain organic acids, as citric and malic, which become alkaline bases when metabolized, thus adding to the alkali reserve of the body.

Explain the value of maternal feeding for an infant in preference to artificial feeding.

Breast milk from the mother is always fresh and clean and cannot, therefore, carry infectious germs. It is always available and does not need precautions to keep it, as icing, pasteurizing, etc. It is far less expensive than any other infant food. It contains a full complement of all the essential vitamins as well as certain unknown substances which prevent disease, especially of the infectious type. It will not only prevent illness in infants but will help a sick infant to recover from disease far more rapidly than any artificial food.

State reasons why mothers should be urged to nurse their babies.

(See above question.)

Give a simple method of determining how much milk a child nurses from its mother.

By weighing the infant before and after nursing, being careful to make no change in the clothing. The difference in weight will represent the amount of milk taken by the child. This ought to be done at both breasts and at different hours of the day to arrive at an average.

What is the advantage of giving one supplementary feeding to an infant?

If given after the third month of life when lactation is well established, the supplementary feeding allows the mother more time between feedings for her personal or household affairs, and by the fact of relieving hurry and mental stress may improve the secretion of milk at other feedings.

What effect does constipation have on the mother's milk?

What is the result with the baby?

Constipation in the mother has an injurious effect on the quantity and quality of the mother's milk.

Constipation in the mother usually produces intestinal discomfort and constipation in the nursing infant.

What points would you emphasize in instructing a mother in the preparation of artificial food for a sick infant?

- (1) The importance of using sterile bottles and nipples.
- (2) The importance of having clean milk and sterilized containers and utensils.
- (3) The importance of accuracy in measuring and weighing ingredients.

What are two most important subjects of pediatrics?

Infant feeding and correction of digestive disorders.

When the urine of an infant stains the diaper, what is generally indicated?

That the urine contains urates in excess. More fluid should be given the infant.

Why should an infant be given water daily and how?

To replace that lost through sweat, urine, and feces. The usual amount of food contains insufficient fluid.

Water should be given from bottle or cup at such times as to not interfere with the baby's appetite for food.

DIET IN OLDER CHILDREN

Outline a simple, fairly economical diet for a child of 8 years.

A quart of milk daily.

A cup of purée or vegetable soup.

Cereals—such as oatmeal, cornmeal, hominy, rice, once or twice a day.

Egg—soft boiled or poached, once a day.

Meat—beef, lamb, chicken, once a day, preferably stewed.

Stewed fruits—apples, peaches, prunes; blanc mange, bread or rice pudding.

Bread and butter.

Outline a day's menu for a child 18 months old.

7.00 A. M.—Soft boiled or poached egg or 1 slice bacon.
Bread and butter or toast. Top milk (upper 28 ounces of a quart) 8 ounces.

10.00 A. M.—2-5 tablespoonsful of cereal with 2 ounces of cream.
Toast with butter. Top milk, 8 ounces.

1.30 P. M.—Boiled rice or baked potato with butter. 1-2 table-
spoonfuls of minced white meat of chicken, rare
beef, lamb, mutton or fish, or calves' liver pulp.
Milk or top milk, or vegetable soup with rice or
barley. One tablespoon mixed spinach and
potato.

4.00 P. M.—Orange juice—2 ounces.

6.00 P. M.—Cereal—3-4 tablespoonsfuls with 2 ounces of cream.
Apple sauce, prune pulp, ounces 1-1½. Toast
and butter. Milk or top milk.

Outline a good diet for one day for an eight-year school child.

A child of this age needs 1750 to 2000 calories. The following diet should suffice.

Breakfast—Milk—6 ounces.

Cereal, cooked, ½ cup with 1 ounce of cream and 1
teaspoonful of sugar. Bread or toast, 2 slices, but-
tered.

Bacon, 2 slices, or liver, or egg.

Juice of 1 orange, or a pear, or ripe banana.

Dinner—(Middle of Day)

One glass of milk.

Two slices of bread and butter.

Meat, roast beef or chicken, a piece about $3\frac{1}{2}$ inches square by $\frac{1}{3}$ inch.

Mixed vegetables, $\frac{1}{2}$ cupful, as spinach, salad, lettuce with tomato, $\frac{1}{2}$ portion with French dressing.

Dessert—as custard, blanc mange, or rice pudding, or baked apple or prunes.

Supper—Milk or cocoa, 1 glass.

Cereal, cooked, $\frac{1}{2}$ cup, with cream.

Bread or toast—1 or 2 slices.

Apple sauce or gelatine, with a piece of plain cake or cookie.

DIGESTIVE DISORDERS—GASTROINTESTINAL DISEASES—NUTRITIONAL DISEASES

STOOLS

State the significance in the stool of an infant of (a) blood, (b) mucus, (c) curds.

(a) Blood in an infant's stool accompanying diarrhoea with mucus means an ulcerated condition of the bowel, colitis or ileocolitis. Blood accompanying a constipated stool means a slight laceration of the mucous membrane of the anus or rectum.

(b) Mucus in an infant's stool means that something caused an irritation of the bowel. This may be due to a fermentative diarrhoea, or to an actual infection, as colitis. When enemata or suppositories have been used for some time, a certain amount of mucus is found in the infant's stool as a result of irritation.

(c) Curds in an infant's stool are of two main types—those of fat soaps and those composed of protein. The fat soap curds are soft, yellowish, small and are seen in fermentative diarrhoea and sometimes in colitis. The protein curds are bean-shaped, are formed in the stomach and have little significance. Boiling the milk causes protein curds to disappear.

What kind of stools cause chafing in infants? How can nurse relieve this condition?

Acid stools cause chafing in infants. A nurse may relieve this condition by using only oil to cleanse the infant's buttocks after

promptly removing diaper, and by a liberal application of Lassar's paste with talcum powder.

Describe two abnormal stools and tell what they indicate.

The light-green stool containing small white or yellowish masses with mucus, is indicative of overfeeding, especially with fat. The small dark-green stool, made up largely of mucus, is characteristic of underfeeding.

What is the appearance of an infant's normal stool?

The normal breast-fed infant's stool is soft and smooth and glistening, not formed, and light yellow in color. The artificially fed baby usually has a formed stool, not so characteristically yellow and more putty-like.

What may be learned from observation of the bowel discharges regarding the condition of the digestive system?

The Color.—Green stools, when passed recently, indicate a decomposition process often due to bacterial action on sugar. Green stools, dark in color, mixed with mucus, are seen in starvation. Yellow, thin, watery stools are seen in intestinal indigestion of a fermentative type. Sometimes fat or casein particles are seen mixed with mucus in both the yellow and green stools.

The Odor.—Fermentative stools are sour and usually cause chafing. They are seen in ordinary gastro-enteritis. Foul-smelling stools are seen in severe intestinal intoxications accompanied by fever.

Curds.—Soft yellow curds are undigested fat-soaps; hard bean-shaped mucus curds are undigested protein, and always indicate intestinal irritation; when intimately mixed with the stool, irritation in the small bowel; when in large masses, irritation in the large bowel.

Blood.—Fresh streaks of blood on a constipated mass of feces usually means an abrasion of the rectum.

When occurring intimately mixed with the stool, especially with mucus and grayish membranous patches, it indicates a colitis or entero-colitis. Red blood comes from the colon or rectum; dark blood from the upper part of the intestinal tract.

Consistency.—Very liquid stools are seen in acute and chronic intestinal indigestion and in acute bacillary dysentery. Constipated stools, light-gray in color, are seen in fat indigestion. Ordinary atonic constipation shows yellow or brown stools.

Describe the stool of a baby suffering from very severe intestinal indigestion.

The stool will be very liquid, yellow or green in color, with mucus in small shreds and pale yellowish curd-like masses. The reaction will be acid and a fermentative odor will be noticed.

CONSTIPATION

What would you advise a mother to do for a child suffering from constipation?

The mother should be instructed to regulate her own bowels and to early accustom the child to the regular use of the chamber. After the sixth month orange juice may be given, and if the baby is artificially fed, oatmeal. Abdominal massage is also useful. Small doses of milk of magnesia may be employed, and in emergencies, soapsuds enemata, though the regular use of the latter is not recommended. Mineral oil, given once daily in teaspoonful doses, is sometimes useful.

Give several essentials for prevention of constipation in infants artificially fed.

1. The infant should have enough fluid.
2. The milk formula should not be unduly high in fats.
3. The formula should not be too low in carbohydrates.
4. If over six months of age, cereals with a small amount of roughage should be added to the diet, and later green vegetables.
5. The infant should be trained from the first month onward to sit on a vessel at a definite time in order to inculcate the habit of daily bowel movement.

DIARRHŒA

What are some of the causes of diarrhœa?

Extreme heat and humidity predispose, especially during the teething period. The exciting cause is some irritant, either a fermentation of food elements or the action of the toxins of pathogenic bacteria, found in food or milk, or mechanical irritation from particles of indigestible foods.

What nursing measures would you use pending the arrival of the doctor when a baby is taken ill with summer diarrhœa?

In summer diarrhœa all milk and other food should be stopped. A preliminary purge with castor oil may be given if vomiting is

not present, and small sips of water given by mouth instead of food.

Give treatment of acute diarrhœa in infancy.

A preliminary purge and nothing but water by mouth for the first twenty-four hours is indicated in acute diarrhœa. Then either barley water alone, or barley water with boiled skimmed milk, or protein milk is given. In a few types of infectious diarrhœa, weak sugar solutions are used as food. Rectal irrigations with normal salt solution are frequently employed.

What care should be given the diapers of a child having diarrhœa, and why?

The diapers of a child having diarrhœa should be placed in a separate receptacle and treated like the excretions of a typhoid fever patient, disinfecting the hands carefully after handling them and boiling the well-cleansed napkins before using them a second time. This is necessary because diarrhœas are frequently of an infectious nature.

What is cholera morbus and to what is it due?

Cholera morbus is acute ileo-colitis. It is caused by an infection with the bacillus of dysentery.

Are dysentery and cholera infantum communicable diseases?

Yes; as they are caused by bacteria ingested in food or drink.

What are the symptoms of colic in children?

Violent and vigorous crying, usually not appeased by taking the child up and only temporarily so by feeding, accompanied by kicking and movements of the arms, the hands and feet being cold and the abdomen distended, are the symptoms of colic in young children.

What is colitis?

Colitis is an inflammation of the mucous membrane of the colon, characterized by frequent evacuations of mucus from the bowels, with or without blood and pus. The acute type caused by infection with bacteria of the dysentery group is frequently fatal, particularly when it occurs in infants.

What precautions would you take in caring for an infant with diarrhœa?

The same precautions as are exercised in typhoid fever should be taken in caring for an infant with diarrhœa. Soiled napkins, bedding, etc., should be dropped in antiseptics or boiled immediately. The hands should be carefully disinfected after handling the baby or the bed-clothes, and especially after changing the diapers.

What advice would you give a mother with a view to the prevention of summer diarrhœa in children?

The baby to be well in summer should not wear excessive clothing when the weather is warm; should not be exposed to the mid-day heat and should be frequently bathed. The milk should be properly pasteurized and the amount of food should be lessened when the heat and humidity increase, especially if the infant is teething. This applies also to the breast-fed. No pacifiers or other articles to suck on should be allowed. Contact with those nursing other children who have diarrhœa should be avoided. No person should prepare food or handle a young baby who has handled a baby with diarrhœa, or who has handled or washed napkins of such a baby.

Describe the method of giving treatment for intussusception before surgery is resorted to.

Before surgery is resorted to in intussusception it is sometimes deemed advisable to use injections of warm water or normal salt solution, with the child in a semi-inverted or knee-chest position. A long rubber catheter is used and the vessel containing the fluid is elevated 3 or 4 feet above the level of the buttocks. As the child is usually less than 2 years old, care should be taken not to use too large a quantity of fluid.

What are the symptoms of pyloric stenosis and treatment?

Vomiting beginning from third day to sixth week of life, most often at or about the third week, and becoming progressively worse. Vomiting is projectile in character and usually within the first fifteen minutes after nursing. The bowel movements are scant or none at all. In well-marked cases a wave of contraction may be seen to move across the upper half of the abdomen from left to right.

Treatment is medical or surgical. Atropine is given before feedings to relax the pyloric spasm. Following the atropine food may be given. This is either thick cereal feeding or, as recommended by some authorities, a thin formulæ, in small quantities.

Surgical treatment consists in incising the wall of the pylorus down to the mucous coat. This operation is known as pyloroplasty.

Mention several reasons for digestive disorders in artificially-fed babies.

1. Dirty or contaminated milk or formula.
2. Improper feeding, especially of carbohydrate ingredient.

What would you advise a mother to do for a baby with diarrhœa?

Stop all food at once and call family physician. If physician is not to be had give baby a cathartic, give nothing by mouth except water for the next eight to sixteen hours, depending upon the age of the child. Then give suitable diet until bowels improve.

DISEASES (GASTROINTESTINAL AND NUTRITIONAL)

Discuss very briefly the curative treatment of rickets.

Rickets when present may be cured by exposure of the naked body to the sun's rays in gradually increasing doses, or by exposure to an ultra-violet light lamp. The administration of potent cod liver oil in sufficient doses ($\mathfrak{Z}_{II}^{\ddot{}}$ to $\mathfrak{Z}_{IV}^{\ddot{}}$ daily), or large doses of viosterol (15 to 20 drops daily) will also cure rickets.

Name several deformities which may occur as a result of rickets.

The deformity of the lower chest, in which the ribs are drawn inward by the diaphragm, known as Harrison's groove, the square flat head, called box head, the bowing of legs, and knock-knees are common deformities which occur as a result of rickets.

Define ileocolitis, marasmus, cervical adenitis.

Ileocolitis is a disease in which the ileum and colon are inflamed.

Marasmus is a term, loosely used, to indicate a state of advanced malnutrition in infants, in which the temperature is subnormal, the fontanelle depressed and the tissue turgor very poor, or absent.

Cervical adenitis is an inflammation of the cervical lymph-nodes.

(a) What principles are necessary in the food of growing children besides protein, fat, carbohydrate, and mineral salts, and what are these principles called?

(b) Name each of these principles and give an example of a food containing one of each of them and a condition produced by their absence in the diet.

(c) What food contains all of these principles to some extent?

(a) Certain accessory food principles known as vitamins have an influence on the health and nutrition of the child, and of the adult, and their entire absence from an otherwise well balanced dietary not only induces malnutrition, but gives rise to certain well defined diseases, known as deficiency diseases.

(b) These accessory food substances are known as the Fat-Soluble A, Water-Soluble B, and Water-Soluble C vitamins respectively. Another accessory food substance called vitamin D was once known as the X substance.

Vitamin D is found in cod-liver oil, and to a lesser degree in egg yolk. Its absence from the diet combined with the absence of sufficient sunlight on the body will allow the infant to suffer from rickets.

Water-Soluble C vitamin is found in abundance in orange juice, lemon juice, tomato juice, and also in leafy vegetables, but to a lesser degree in raw fresh milk and potatoes. Its absence from the dietary is the cause of scurvy.

(c) Cows' milk when clean and fresh and raw contains some of each of these vitamins, but not sufficient to protect the body of the infant after six months of age. Human milk, provided the mother's diet and hygiene is right and proper, will contain all of the accessory food substances.

Is rickets a disease of bone alone?

No. Rickets is rather a disease of the mineral metabolism, marked particularly by a disturbance of the normal amounts of phosphorus, or calcium, or both, in the blood serum. Because of this mineral poverty in the blood, the bones are unable to secure the minerals necessary for proper calcification.

Is the blood calcium always low in rickets?

No. Blood calcium is sometimes normal or nearly so in rickets. Blood phosphorus is practically always diminished to a greater or lesser extent in rickets.

What condition occurs when the blood calcium is low?

Tetany occurs when blood calcium is reduced one-half or more. Tetany may be latent or active.

What are the two principal causes of rickets?

Rickets is brought about by lack of a proper amount of sunshine on the child's skin and by lack of anti-rachitic substances in the diet (as cod-liver oil).

What should be done for a breast fed baby in whom rickets is suspected?

He should be given sunbaths, in sun not passed through window glass, or treatments with ultra-violet light from a mercury-vapor-quartz or carbon-arc light every day if possible or at least three times a week. In addition he should receive two teaspoons of potent cod-liver oil daily in his diet. Both the sun treatments and the cod-liver oil should be given in gradually increasing dosage.

What is the usual cause of infantile scurvy? What is the usual diet for this disease?

The usual cause of infantile scurvy is a deficient and improper diet—the diet lacking in vitamin C.

The usual diet for this disease includes orange juice, raw milk and beef juice, given in small quantities but at frequent intervals, as all these substances contain vitamin.

Give three disposing causes of rickets.

1. Dark, poorly ventilated homes.
2. Lack of proper vitamin in food.
3. Black or swarthy races in a cool climate.

Why is Ultra-violet ray treatment beneficial to children?

Ultra-violet ray treatment in infants will prevent or cure rickets. In both infants and older children it has some effect in promoting growth, assisting in the cure of certain anæmias and aiding the body in developing resistance to infection.

NURSING MEASURES

What are some main points of difference in the nursing of children and the nursing of adults?

The child is more unreasonable and requires greater patience and tact than the adult patient.

The child cannot express himself intelligently as to his symptoms and requires greater intuition and closer observation on the part of the nurse.

The child has a more unstable digestive tract and requires greater care in diet and feeding than the adult.

Name qualifications especially necessary in a woman who nurses children.

Patience, sympathy and fondness for children.

What avenues of approach to a little child are open to a nurse?

Many children are shy or have negativistic traits. The nurse should not make too rapid advances to such children, but should wait until the child's normal instinct of curiosity is awakened. The child will then frequently make advances, (1) the play instinct is active or dormant in all children. Cutting out or making dolls, or toys of various sorts, will nearly always interest the child from 2 to 6, (2) the desire to be mothered is another strong instinct in children. Once the nurse has obtained the child's confidence a little judicious petting will consolidate the nurse's gains in friendship.

What must be remembered when trying to elicit information of subjective symptoms from a child?

That the child has not the discerning intelligence of an adult and may give incorrect answers.

Describe three different cries of a young baby and the meaning of each.

While it is impossible to absolutely interpret the infant's cry, yet the cry of pain is loud and continuous, the cry of temper is shrill and loud and the baby stops when picked up, while with the cry of hunger the baby usually sucks its finger and stops as soon as fed.

How should a nurse reply when told, "it is a good thing for children to have the common contagious diseases when young"?

The nurse should point out that latent tuberculosis and pneumonia frequently follow measles and whooping-cough, and that the latter diseases exceed in certain districts scarlet fever in mortality; that all contagious diseases are dangerous, and that all of them are preventable under proper precautions.

Specify three important points in the management of convalescent children.

(1) Convalescent children should not be allowed to play vigorously, and should be provided with diversions not involving muscular strain.

(2) They should be carefully guarded from damp, chilly and draughty rooms, and exposure to sudden changes of temperature.

(3) They should be gradually weaned away from the "spoiling" incident to a severe illness, but not too suddenly returned to normal discipline.

What is the characteristic cry of earache, croup, pain in chest, weakness and colic?

The cry of earache is sharp, brief and piercing; of croup, is hoarse and brassy; of pain in chest is cut short with expiratory grunt; of weakness is wailing and faint; of colic is long drawn out and vigorous.

What are frequent causes for sudden rise of temperature in children?

Intestinal intoxication, catarrhal otitis media, and grippe, or other contagious diseases, are frequent causes of sudden rise of temperature in children.

What is the normal temperature of an infant? Where should it be taken? How long should thermometer be left in place?

99° to 100° taken by rectum. From three to five minutes.

Are all temperatures in children higher, or lower, than in adult life?

Children have a normal temperature corresponding to adults, yet in the very young the rectal temperature may correspond to

the oral temperature of the adult. In disease, young children usually have higher temperatures than the adult, as heat regulation in infants is less stable than in adults.

When the rectum of a child is diseased, in what parts of the body should the temperature be taken?

Either in the axilla or groin.

What important precaution is necessary to observe when giving an infant a hot pack or bath?

To test the water with a thermometer so as not to have it at too high a temperature and produce scalding. The water should rarely be above 110° F.

State fully what symptoms would indicate the need for the hot bath when a doctor could not be obtained.

Convulsions in an infant are always an indication for the use of the hot bath or pack.

What should be the temperature of the bath for a baby?
90° F. to 95° F.

What is the temperature of a tepid bath?
89° F. to 90° F.

How would you give a mustard bath?

One tablespoonful of mustard to one gallon of water. The water should be 95° F. to 105° F. The patient should be immersed in the bath as in an ordinary hot bath, and held there until the skin becomes bright red.

Give a list of the required equipment for the giving of a mustard bath to a small child with convulsions in a private home.

In a private home the assembling of elaborate equipment would be impossible. All that would be required would be:

- (a) A tablespoon and a can of dry mustard.
- (b) A small bathtub holding at least four quarts or a gallon of water.
- (c) A reasonable quantity of clean hot water.
- (d) Towels.

A bath thermometer in such an emergency could be dispensed

with, the proper temperature of the water being ascertained with the back of the nurse's hand.

What is a quick way of preparing a mustard bath?

Add a tablespoonful of mustard, previously made into a paste, to a gallon of water at 100° F. to 105° F.

How would you take the temperature of a sick child and why?

The temperature of a sick child should be taken by rectum, because of the child's inability to hold the thermometer under the tongue, and the danger of biting down and fracturing the fragile glass when the mouth method is used.

Mention two non-medicinal methods for the reduction of fever.

Fever may be reduced by bath, packs, or cold enemata.

Describe the proper method of giving a rectal irrigation.

The technic of giving a rectal irrigation to a child differs in no way from that used in giving an enema, excepting that a larger quantity of fluid is used in fractional amounts. A fountain syringe or douche can, or the funnel and pitcher may be used. The fluid should never be held over 2 feet above the child's buttocks. Relatively small quantities, from 3 to 6 ounces, dependent upon the age of the child, are slowly injected. The rectal tube is then detached or the funnel lowered, and the fluid is allowed to flow out. The operation is then repeated until the prescribed amount of fluid has been used.

Name some undesired effects from enemata due to improper administration.

Bleeding or irritation of the rectal mucosa due to forcing the tube into the rectum without lubrication or using a hard tube.

Excessive mucus formation due to irritation from rough handling of the tube.

Cramping pains due to the injection of air.

How would you give an aural douche to a young child?

Place the baby on its back with the affected ear toward you, holding a small basin and a towel under the external ear. Use

for irrigation a small, soft rubber ear syringe. Fill the syringe with the fluid, warmed to the prescribed temperature, hold the dish in place, gently retract the external ear backward and inject, using very little force. Repeat until the return fluid is clear.

Mention the benefits of hypodermoclysis in dehydration.

Hypodermoclysis restores to the body fluid which it sometimes cannot obtain in any other way, such as when persistent vomiting and diarrhoea are present. In these conditions the body fluids become over-concentrated so that normal physiology and normal metabolism are interfered with and a vicious circle is established. By the introduction of fluid under the skin, these morbid processes are checked, the body tissues become firmer to touch, the skin becomes moist, fever tends to become somewhat lower, if present, and the kidneys excrete a more normal amount of urine.

What procedures would you use on admission of a child to the hospital?

On admission: Throat culture of all children. Vaginal smear on girls.

For surgical cases a permission for operation signed by parent or guardian.

Isolation or cubicle technic for one week.

Usual physical examination.

What methods would you use in marking an infant for identification?

Any approved method, as name tape on wrist or ankle; or necklace, bracelet or anklet of lettered beads spelling surname of parent. Initial, numbers or full name should be used if there is duplication of names or in case of twins or triplets.

How would you obtain a specimen of urine from a male child? From a female child?

A small test tube may be fastened with adhesive plaster to the scrotum of the male child so as to enclose the penis. The finger of a rubber glove with some of the hand portion surrounding it may be used in the female child, a test tube being surrounded by the cut-off finger, while the base of the finger is attached about the vulva with adhesive plaster. Or a flat bird-seed container may be fastened with the orifice over the urethra. If the apparatus is not available and the child does not urinate when placed on a

vessel, the urine may be caught in absorbent cotton and the latter squeezed out when saturated, or the child may be placed on two hard pillows with a space containing a vessel between them.

What is the nasal drip? How is it given?

The nasal drip is a method of giving fluid slowly to dehydrated infants, who tolerate with difficulty larger quantities of fluid given by mouth. The apparatus similar to that used for a "Murphy" drip is attached to a very small catheter, usually about No. 12 F. The catheter is inserted into the nose and pushed down to two-thirds of the distance of the œsophagus. The catheter is then strapped in place with adhesive strips and the fluid allowed to drip in slowly.

What should be used in cleaning a baby's mouth?

A baby's mouth should be cleaned with a piece of gauze or cotton around the forefinger and medicated with a solution of boric acid, 3 per cent.

Would you permit a child in your care to suck its thumb or a pacifier?

No; unless the child had previously become addicted to the habit and was now too ill to institute proper disciplinary methods.

Name five observations in regard to a sick child which would lead you to immediately call a physician.

- (1) The presence of high fever, 102° F. or over.
- (2) The presence of convulsions.
- (3) The appearance of blood in the stools or vomitus.
- (4) Cyanosis or rapid pulse.
- (5) Subnormal temperature and sunken fontanelle.

Name seven observations a nurse should make in the nursing of a sick child.

- (1) Pain, its locality, duration and character, if determinable.
- (2) Bodily strength—ability to sit erect, use limbs, etc.
- (3) Bodily condition—plump, emaciated, tissue-turgor diminished.
- (4) The appearance of the skin—dry, moist, discolored, eruptions, scars.
- (5) The hue of the skin—red, pale, cyanosed, etc.

(6) The presence and locality of swellings, tumors, œdema, etc.

(7) The temperature of the body and the character of pulse and respiration.

Name the articles needed for a spinal puncture.

(1) Sterile sponges and cotton, (2) Several sterile lumbar puncture needles with stylus in a sterile tray, (3) Alcohol and Tincture of Iodine, (4) Hæmostats, or sterile applicators for disinfecting puncture field, (5) Sterile towels, to protect field, and clamps to hold them in position, (6) Two sterile test tubes to catch spinal fluid, one containing a small amount of diluted acetic acid marked "for cell count," (7) Adhesive plaster, or collodion to close the puncture.

Give general rules for making flaxseed poultice, and mustard plaster, turpentine stupe.

(See "General Nursing.")

How would you prepare albumin water, beef juice?

(See "Dietetics.")

How would you care for an infant with excoriated buttocks?

1. Boil diapers for twenty minutes.
2. Use only an oil for cleansing buttocks—no water.
3. Apply Lassar's paste and powder well at each changing.

RESPIRATORY DISEASES

What are the predisposing causes and the exciting cause of lobar pneumonia? Mention three points that are characteristic in the appearance of a child suffering from this disease.

The predisposing causes are cold, fatigue, previous debilitating diseases.

The exciting cause is the diplococcus of pneumonia, the pneumococcus.

The child suffering from pneumonia has heightened color, rapid respiration with dilated alæ nasi and usually lies on the affected side.

Is the temperature always high at the onset of broncho-pneumonia in infants?

No. In infants much depleted by disease and especially in the pneumonia following influenza or measles in weak infants, the temperature may be low at first, out of proportion to the rapid grunting or moaning respiration which is usually present.

Why is bronchitis such a grave affection in the very young?

Because pneumonia is so prone to develop.

What simple procedures will help to prevent colds in an infant?

Care in dressing the infant according to the temperature and weather conditions, rather than according to the season, not exposing him on damp or windy days, and absolute quarantine from all persons having any symptoms of a cold will help to prevent colds in an infant.

If a child in the ward has suddenly a slight rise in temperature, begins to sneeze and has running of the eyes and nose, what would you suspect?

A child with these symptoms may have influenza or measles, or a simple rhinitis.

(a) Differentiate between lobar and bronchial pneumonia, as to onset, temperature curve, termination of disease and prognosis.

(a) The onset in lobar pneumonia is sudden, usually without any previous illness. Bronchial pneumonia is usually secondary and more gradual in onset. Temperature curve: Lobar; sudden rise quite high, remains high and drops by crises. Bronchial; may rise suddenly, usually gradually, remains high with some irregularity and drops by lysis. Termination: Lobar, uncomplicated, usually progresses rapidly. Bronchial; less rapid recovery. Prognosis; guarded in both types, but better in lobar pneumonia.

What type of pneumonia is more prevalent in infancy?

Bronchopneumonia is the type of pneumonia more prevalent in infancy.

Give the correct name for membranous croup. What is its proper treatment?

The correct name for membranous croup is laryngeal diphtheria. The proper treatment is isolation, very large doses of diphtheria antitoxin, and if necessary, intubation.

In an emergency in the country districts what may a nurse do in the physician's absence to alleviate catarrhal croup?

1. Improvise a steam kettle from a tea kettle. Place the infant under an improvised tent made from a sheet draped over an umbrella and direct the steam with a section of hose into the tent.

2. See that fires be kept up to warm the air of the dwelling and close all windows.

3. Give 15 drops of syrup of ipecac, if obtainable, every 15 minutes to a two-year-old child, until relieved, or vomiting is induced.

4. Or induce vomiting by placing a wrapped finger in the child's throat.

Give the correct names for the two diseases known as true and false croup. What is proper treatment for the former?

False croup is spasmodic catarrhal laryngitis.

True croup is laryngeal diphtheria.

The proper treatment for the latter is diphtheria antitoxin, and, if necessary, intubation.

Give symptoms of spasmodic croup and nursing measures for relief of same.

In spasmodic croup the child is usually apparently well when he goes to bed, but awakens a few hours later with a hoarse metallic cough and very difficult breathing, the face red or purplish and much suffused.

The child should be wrapped in warm blankets, the windows closed and the air in the room made warm and moist. Turning on steam outlets in radiators and heating water over a gas burner are useful to produce this result. An ordinary kettle with a paper nozzle may be used to answer for a croup kettle, and the infant placed in a canopy made by draping a sheet over

an umbrella, allowing the nozzle of the kettle to project the steam under the improvised canopy. An alcohol stove is useful to keep the kettle boiling, but care should be taken to avoid burning the bed-clothes. Hot or cold compresses should be put on the throat. In violent paroxysms, the finger, covered with gauze, may be passed into the child's throat and tenacious mucus removed. If a physician is not available, the use of emetics may be advisable. Syrup of ipecac in teaspoonful doses is useful to produce vomiting. When the attack has subsided the room should be gradually cooled and dry clothing placed on the child.

Why should the position of a child ill with pneumonia be carefully and frequently changed?

The position of a child ill with pneumonia should be carefully and frequently changed because of the tendency in this disease toward hypostatic congestion of the lungs.

In a case of operation for empyema, what special care must the nurse exercise regarding the drainage, if she does the dressing, and why?

In dressing a case drained for empyema the nurse must be careful not to remove the tube when taking off the dressing, and also not to make pressure on the tube, so as to force it inside the pleura. The tube should also be kept open, as otherwise the drainage will be inefficient.

DISEASES OF EYE—EAR—NOSE—THROAT

(a) How would you open the patient's eye? (b) How evert the lids? (c) How remove foreign bodies? (d) How put drops in the eye?

(a) In opening an eye when the lids are swollen, force should not be used. Dried secretion should be washed away with normal salt solution and cotton pledgets, and the upper lid pulled upward and held with the left hand, after which the lower lid is pulled gently downward with the right hand.

(b) To evert the lower lid, direct the patient to look upward and roll the lid downward toward the cheek-bone. To evert the upper lid, seize the lash and roll upward over a probe or tooth-pick.

(c) When the lids are everted the patient is told to move the eye freely about. The foreign body is looked for meanwhile and

when detected is removed with a clean camel's hair brush, or a cotton-wrapped probe. No force should be used. The eye should then be washed with warm boric acid solution and if much irritated, should be bandaged.

(d) Drops should be placed in the eye by raising first the upper and then the lower lid, making the conjunctival sac deeper. The solution should be warm and should be dropped from within outward, and the eyelids closed.

Give cause of ophthalmia neonatorum and what the results are likely to be if not arrested.

Ophthalmia neonatorum is caused by the diplococcus of gonorrhœa. Permanent blindness is caused by the extension of the inflammation.

Mention some important points to be remembered in the care of gonorrhœal infection of the eye.

- (1) That the infected eye contains the infective agent.
- (2) That scrupulous care should be taken in disinfecting.
- (3) That the dressing, etc., from the infected area should be immediately burned.
- (4) That the non-infected eye should be sealed up to prevent contact infection.
- (5) That all treatments should be given with the patient's head turned to the same side as the diseased eye, and instillations and irrigations made from within outward.
- (6) That energetic and conscientious treatment may save the patient from blindness.

What is the cause of a large percentage of blindness?

Ophthalmia of the new-born causes a large proportion of blindness, although it is a preventable condition.

(a) What should be done when a child gets a foreign body in the ear? (b) In the nose?

(a) Use cold water or glycerine and water and syringe the ear out carefully. This should not be continued for long, as if the subject is porous it may swell. The use of alcohol to prevent this swelling is not advisable. A physician should be summoned if the object does not appear.

(b) Tell the patient to close the nostril opposite the affected one and blow the nose strongly. If low in the nostril sometimes it may be fished out with a hairpin.

Give reasons why a child with a discharging ear should be referred to the physician for medical treatment.

A discharging ear means a perforation of the ear drum with an infection of the middle ear. Such a condition is serious because the inflammation may extend to the mastoid process unless arrested.

Outline the immediate post-operative care of a patient following tonsillectomy.

1. Keep the patient in bed.
2. Apply ice bag to the throat.
3. Use routine post-anæsthetic care as to administration of fluids in small amounts, etc.
4. Watch the saliva or vomitus for evidence of fresh blood, and after the patient is conscious note whether or not he swallows frequently. If so, slow hæmorrhage may be suspected and the surgeon should be notified.
5. The pulse should be taken every 15 to 30 minutes, at first, especially if hæmorrhage is suspected. If a consistent rise of 10 beats per minute is observed, the supervisor should be notified.

(a) What are adenoids? Give symptoms that would indicate their presence. (b) What advice would you give if consulted regarding operation?

(a) Adenoids are lymphoid masses occurring in the nasopharynx in a pathological degree. Inability to breathe through the nose, a susceptibility to naso-pharyngitis, and presence of these masses on palpation are diagnostic points. The "adenoid expression" of the face, a chronic expression of mild air-hunger, is characteristic.

(b) If consulted regarding operation for adenoids the nurse should decline to assume the responsibility of advising such a course and refer the matter to the family physician.

Why is it beneficial for children with adenoid growths to have them removed?

Because removal enables them to breathe through the nasal passages, removes the cause of the prevailing naso-pharyngitis, Eustachian catarrh, etc., and, if done early enough, corrects the "adenoid expression."

Name two diseases frequently followed by suppurative otitis media. Why is this dangerous?

The types of pharyngitis accompanying influenza and scarlet fever frequently cause suppurative otitis media.

This is dangerous because the extension of the inflammation may result in mastoiditis or meningitis.

Mention two adverse symptoms for which a nurse must be on the watch when nursing a patient after a mastoid operation, and state their probable significance.

Sudden rise of temperature with rapid pulse—a stoppage of drainage.

Sudden rise of temperature without rapid pulse, especially with headache and unequal pupils—sinus thrombosis or meningitis.

What would you do for a child with earache?

For a child suffering from earache, irrigate the ear with hot water, using a soft rubber ear syringe.

What is intubation? Tracheotomy?

Intubation is the operation of passing a specially constructed hard-rubber or silver self-retaining tube into the larynx, to prevent the closure of the latter and establish an air-way.

Tracheotomy is a cutting operation in which the skin, fascia, pretracheal muscles and the trachea itself are divided sufficiently to admit the insertion of a special tube called a tracheotomy tube, when for any reason the glottis is closed or constricted.

Describe nursing care following intubation.

The patient should be carefully and closely watched, never left alone, and kept recumbent or upright, but not allowed to lie upon his face on the bed or the nurse's shoulder. Nursing infants may continue to nurse at the breast if the mothers have been immunized. Older children are best fed with semi-solids as gruels, custards, etc. It is seldom necessary to follow Castleberry's suggestion that the patient be fed while his head is lower than his body. No food should be given however, for 2 or 3 hours after intubation.

How would you hold a child for treatment of throat?

Restrained by a sheet encasing the body, firmly held between the knees, with the head between both hands.

What dangerous symptoms should a nurse watch for in cases of inflammatory diseases of the ear?

1. Sudden rise in temperature.
2. Chill or convulsion.
3. Pain or swelling in mastoid region.

SKIN DISEASES

How would you care for a child suffering from eczema?

Bathe the skin in the manner prescribed by the physician, or omit bathing when directed to do so. Use only soft wash cloths when bathing and do not use any force in drying the skin or applying medicaments. Careful directions should be obtained regarding diet and feeding and scrupulously followed. The bowels should be kept in a non-constipated condition. To prevent scratching, soft cotton mittens may be made, the sleeves of the night dress pinned to the bed, or aluminum balls worn on the hands.

What is pediculosis and how should it be treated?

Pediculosis is a parasitic disease caused by the louse insect. *Pediculosis capitis* affects the head only; *pediculosis vestimentorum*, the parts of the body covered with clothing; *pediculosis pubis*, the hair-covered pubes.

Pediculosis is treated by (1) moistening the hair of the affected area with diluted vinegar to remove nits; (2) combing the hair of the scalp with a fine-toothed comb, and (3) applying solution of bichloride of mercury 1-500, or tincture of larkspur, or coal oil, and wrapping up the head in a towel for 12 hours. A second soaking with vinegar and water is resorted to and another combing. This is repeated until the head is clean. The same procedure, omitting the soaking with vinegar and combing, is used when lice are found on the body. The clothing is baked in an autoclave or destroyed.

What is impetigo neonatorum and when does it appear? How may it be transmitted from one infant to the other?

Impetigo neonatorum is an infection of the skin appearing in the form of blisters and later crusts, which is found in the newborn infant, usually in epidemic form in hospital nurseries.

It may be, and usually is, carried and distributed by the hands of nurses and attendants or by wash cloths, coverings, scale-pads, etc.

What is the danger of this disease?

As it is a mixed staphylo-streptococcic infection it may cause sepsis.

How would you treat impetigo in a young baby?

Treatment: Bathe the baby in 1-5,000 solution of bichloride of mercury twice daily, followed by applications of 1 per cent. or 2 per cent. ammoniated mercury ointment to lesions. Sterilization of all clothing used by baby.

What is the cause of scabies?

Scabies is caused by the itch mite, which burrows under and lays its eggs in the skin.

The treatment of scabies is as follows:

1. Hot bath at night followed by application of sulphur ointment from neck down, covering the whole body with a thin layer.
2. Continue for three nights in succession using same underwear, night clothes and bed clothing.
3. Fourth night—change all bed clothing, skip treatment.
4. Continue for three more nights as before.

NERVOUS AND MENTAL DISEASES

What may convulsions in children indicate?

Convulsions in children may indicate tetany, indigestion, intestinal parasites, the beginning of some infectious disease, meningitis or epilepsy.

What may the nurse do in case of convulsions?

Place the patient in a hot bath with ice to the head.

What may the nurse do in case of epilepsy?

Loosen clothing, place the patient in a quiet place, put a piece of soft wood or cork in the mouth to prevent biting the tongue and do not disturb the patient any more than is necessary.

What may the nurse do in case of fainting?

Loosen clothing, lower the head, put cold water on the face and give inhalations of smelling salts or ammonia.

Mention three common causes of convulsions with children.

The onset of contagious diseases, constipation and intestinal parasites.

Mention two symptoms which would suggest retarded development.

A "backward" or retarded child will not walk or stand erect till long past the normal period—the normal child should walk when 2 years old. At this time, too, though he may not talk, he should be able to understand spoken language, and to point, when asked, to his ears, mouth, nose, etc.

What is meant by "habits" and their relative importance to the baby?

By "habits" is meant the establishment of a proper hygienic routine in the behavior of an infant and the suppression or discouragement of practices which may injure the infant's health. An infant with good habits is usually healthy and happy.

Mention common causes of bed wetting after a child is two years old. How may the habit be broken?

- (a) Diseases of nervous system.
- (b) Mental deficiency.
- (c) Poor habit training (most frequent cause).
- (d) If no organic lesion is present training and proper hygiene and having child help himself will effect a cure.

Why is thumb-sucking to be discouraged in children?

Because in the young this habit may produce a narrowing of the dental arch, and may predispose toward obstruction of the pharynx with adenoid tissue. Mouth infections are also produced by thumb-sucking.

State the value of institutional care for feeble-minded children.

In institutions these children are placed with groups of their own mental age, and are, therefore, not subject to taunts and ridicule from other, usually older children whom they meet in ordinary school life. Besides, the formal method and instruction of these institutions will develop more satisfactorily all the latent talents of the child. Left to a normal environment, without proper supervision, such children tend to become antisocial, and may even be dangerous.

In the family the mother, through pity, will often neglect the more favored children for the one with retarded mentality, only to

make the latter less adaptable to family life. Often such children, kept in the home, become dangerous, and injure their comrades or even their parents.

Institutional care for them is superior in every way.

INFECTIOUS AND COMMUNICABLE DISEASES

In selecting a room for a child with a communicable disease, what points would you consider?

- (1) Ventilation and available sunshine.
- (2) Proximity to a private bathroom.
- (3) Isolation from the rest of the household.
- (4) Practicability of a communicating room.

Do you think it necessary for a nurse to be able to recognize contagious diseases? Give reasons.

A nurse should be able to recognize contagious diseases, so that proper methods of quarantine may be established in time, and exposure of non-infected persons prevented, or minimized.

What is the nursing care usually given to the skin of children having eruptive diseases? Why?

The skin of children having eruptive diseases is usually gently bathed with warm water every day and an oily preparation, such as cocoa-butter, cold cream or olive oil, applied. This alleviates the feeling of tension and itching in the skin and prevents the dispersion of scales, which are believed to carry the contagion.

(For questions relating to contagious diseases of children, see "General Nursing.")

Outline a hygienic regime for a child with whooping-cough.

Daily bath, plenty of fresh air, sleep in the open air if possible, good light nourishing food in small quantities frequently, frequent change of outer garments to prevent reinfection, supportive bands over abdomen. During paroxysms of coughing moist medicated inhalations—medication as doctor orders.

What are the three most frequent sites of tuberculous infections in young children?

- (1) In the glands, (2) bones and joints (3) meninges.

What is thrush? Causes? Treatment?

Thrush is a disease of the mucous membrane of the mouth caused by the growth of a vegetable fungus. It is characterized by a pearly-white coating covering the tongue and the outer mouth and cheek surfaces, wholly or in part. It is due to the presence of the specific fungus, improper mouth hygiene and depressed vitality on the part of the infant. The treatment consists in oral cleanliness and the use of mild antiseptics to destroy the fungus, such as borax water, boric acid solution, etc., and proper general hygiene.

What are the symptoms of inherited syphilis in the newborn?

Coryza, or snuffles, with sero-mucus or bloody discharge, a weazened, old-man appearance, the presence of pemphigus, or later, syphilitic roseola or mucus patches and fissuring at the mouth and anus, swelling of the toes or fingers, are characteristic in early hereditary syphilis. There is usually an intolerance for food, malnutrition and frequently a resulting marasmus.

What special condition in the infant would lead you to suspect syphilis?

The most frequent and constant early symptom in the infant characteristic of syphilis is the coryza, with muco-purulent or bloody nasal discharge and crust formation, especially if the bridge of the nose is depressed.

If you found that a child had a vaginal discharge, what would you suspect and do?

If a child has a vaginal discharge, a gonorrhœal vaginitis should always be suspected and precautions taken against infection, though some vaginal discharges in the young are not infectious.

How may an individual be immunized against diphtheria?

An individual may be immunized against diphtheria by administration of the diphtheria toxin-antitoxin.

Why is measles a serious disease in childhood?

Measles is a serious disease because its mortality rate is higher than scarlet fever and because it predisposes toward bronchopneumonia which is a serious complication. In addition, otitis

476 STATE BOARD QUESTIONS AND ANSWERS

media is a frequent complication which may be followed by mastoiditis.

MEDICAL AND SURGICAL NURSING

What nursing care would you give a child with chorea?

The child with chorea should have perfect rest. No attention should be paid to the choreic movements, and no excitement or mental fatigue should be permitted. Warm baths are sometimes valuable but the attending physician should be the judge of this.

Why is nursing care so important in an advanced case of chorea?

Because a choreic child may injure himself if he is not watched, and sometimes is unable to take food unless helped by the nurse.

Mention two important points to remember when nursing patients with nephritis.

Patients with nephritis should be kept in an equable temperature with avoidance of chilling, and plenty of fluids should be given by mouth.

What would you do for umbilical hernia in a baby?

Reduce the hernia and hold in place by a strip of adhesive plaster.

Name (a) the articles used in the post-operative feeding of a child with cleft palate, (b) outline the procedure.

(a) (1) One very small soft rubber catheter 16 to 20 F. attached to, (2) A piece of glass tubing, which in turn connects with a piece of rubber tubing and a funnel. (3) A container for the food to be used. (4) Towels.

(b) The nurse holds the child in her lap with the head straight. The catheter having been anointed with sterile oil is grasped near the tip and gently but firmly pushed into the nostril and quickly downward until it encounters the œsophagus, when usually a swallowing movement will be observed. The urging downward should continue until the stomach is reached, when usually some gas escapes. The feeding is then slowly poured into the funnel and the tube moved gently up and down until the fluid flows freely. The tube is then pinched and withdrawn rapidly.

What is pyloroplasty? What condition would show the necessity for this operation in a young infant?

Pyloroplasty is a surgical operation in which the mucous membrane and its basal membrane over the pylorus are incised, the circular muscle of the pylorus split longitudinally, down to, but not through, the mucous membrane lining the stomach and the omentum is tucked over the wound.

It is used largely in the congenital type of pyloric stenosis, seen in the first two months of life.

Why is nursing care so essential in a case of pyloric stenosis?

Nursing care is essential for the following reasons:

- (a) In order to minimize vomiting.
- (b) Because food and medication must be given at proper intervals.
- (c) To watch for untoward symptoms after operation.

Why is it advisable to have an X-ray of the thymus gland before operation? What is done if the thymus is enlarged?

To make sure the gland is not enlarged and liable to cause suffocation during the anæsthetic.

X-ray therapy is given to reduce the size of the gland.

What precautions are necessary to observe when caring for a child with a chronic heart disease?

- (a) Children resting in bed should be prevented from getting up and putting sudden strain on the heart.
- (b) If the child is about, prevent sudden strain produced in competitive games, wrestling, running up inclines or stairs, etc.
- (c) Prevent constipation and overloading of the digestive tract.

Name five diseases prevalent in early childhood.

Five diseases prevalent in early childhood are rickets, measles, ileo-colitis, pertussis and bronchopneumonia.

What would you do for a child who has swallowed a pin or tack?

A child who has swallowed a tack or pin should be fed quantities of bulky foods such as bread and potato. No purgatives should be given.

478 STATE BOARD QUESTIONS AND ANSWERS

What can a nurse do as immediate treatment for a burn by fire, steam or hot water?

Remove clothing gently, cutting it away when necessary, and apply several thicknesses of gauze wet with saturated solution of bicarbonate of soda.

What will you do for a child who has just swallowed coal oil?

Give a tablespoonful of syrup of ipecac, or a teaspoonful of mustard stirred up in a glass of water, in order to induce vomiting. Keep the child lying down and send for a physician immediately.

DIETETICS

FOOD ELEMENTS AND DEFINITIONS

Why is a knowledge of dietetics necessary for the nurse?

The nurse needs to have a thorough working knowledge of dietetics because more and more not only the treatment of various diseases but also the prevention of disease is being accomplished by proper diet. Dietotherapy, or the treatment of disease through diet, has become a very important branch of therapeutics.

Name two mollusks and two crustaceans used for food.

(a) Oysters and clams—Mollusks.

(b) Lobsters and crabs—Crustaceans.

Define dietetics.

The science of questions of diet.

Name the divisions of organic food.

Carbonaceous foods, nitrogenous foods, carbo-nitrogenous foods.

How do carbohydrates and fats differ in their food values?

Fat supplies more heat and energy, weight for weight, than carbohydrates.

How are foods classified according to their chemical composition?

Organic and inorganic.

What is lactose and where found?

Lactose, or sugar of milk, is sugar obtained directly from milk.

Name an important source of (a) phosphorus, (b) iron, (c) fat.

(a) An important source of phosphorus is egg yolk.

(b) An important source of iron is liver.

(c) An important source of fat is butter.

Classify: (a) sugar, (b) butter, (c) milk, (d) eggs.

(a) Sugar is a carbohydrate.

(b) Butter is a fat.

(c) Milk is a protein (casein) with fats (cream) and sugar (carbohydrate).

(d) Eggs contain ash, or mineral salts—phosphates, chlorides, sulphates, calcium salts, and 84 to 90 per cent. water, with protein and fats.

What should be three important considerations in choosing a food?

(1) Nutritive properties; (2) Digestibility; (3) Palatability.

Name the six fundamental food principles and give examples of foods rich in these principles.

The fundamental food principles are fat, protein, carbohydrate, water, mineral salts and vitamins. Pork is rich in fat. Lean meat and cheese are rich in protein. Fruits are rich in water. Green vegetables are rich in mineral salts. Milk is rich in vitamins.

What amount of metallic iron is consumed daily in the body of an individual weighing about 150 pounds?

About $\frac{1}{6}$ of a grain of metallic iron is used up daily in an adult human body weighing 150 pounds.

(a) What are the uses of mineral salts in the body? (b) Name the most important of these salts. (c) Name foods that supply mineral salts. Give specific examples. (d) Name two diseases or conditions due to deficiency in mineral salts, stating under each the chief salt lacking.

(a) These substances are important, the calcium salts making the substance of bone and teeth, while the sodium, potassium, iron and magnesium salts are used in the circulatory fluids.

(b) Calcium, sodium and iron are the most important.

(c) Milk—calcium; eggs, red meat, and green vegetables—iron.

(d) Anæmia—due to lack of iron; rickets—due to lack of calcium salts.

(a) Name the principal source of fat in diet. (b) Which cut of beef is best for beef tea?

(a) Animal and vegetable.

(b) A cut of the round.

Which has the greater food value, beef juice or beef tea?

Beef juice has the greater food value.

Define: (a) protein (b) casein (c) hyperacidity (d) anæmia (e) cellulose (f) certified milk (g) enzyme.

(a) Protein is a food in which the element nitrogen is largely present. It is found in both animal and vegetable foods though more is in the former.

(b) Casein is the principal protein of milk.

(c) Hyperacidity is an abnormal amount of hydrochloric acid present in the stomach.

(d) Anæmia, deficient quantity or quality of the blood.

(e) Cellulose, a carbohydrate forming the framework of plant structures.

(f) Certified milk is milk produced under the supervision of a milk commission appointed by the local medical society.

(g) Enzyme—a bio-chemical ferment which is used in the body to produce chemical changes, as pepsin.

Give function and general sources of carbohydrates.

Carbohydrates are burnt up in the body and are the most important source of heat and energy. Excesses taken are converted into fat and stored up in the body.

Carbohydrates are mainly obtained from the vegetable kingdom and consist of starches, sugars and the vegetable fibre or cellulose.

(a) Name a group of energy yielding foods. (b) What happens to energy materials that are not burned in the body activity?

(a) Carbohydrates.

(b) They are stored in the body, either fat or glycogen.

(a) Calculate the energy value of the following dietary prescription:

Carbohydrate	60 grams
Proteins	55 grams
Fat	165 grams

488 STATE BOARD QUESTIONS AND ANSWERS

(b) In what disease would the above prescription be used? Give your reasons for thinking so.

(a) Carbohydrates yield 4 calories per gram; $4 \times 60 = 240$.

Proteins yield 4 calories per gram; $4 \times 55 = 220$.

Fats yield 9 calories per gram; $9 \times 165 = 1485$.

Total energy value, 1945 calories.

(b) The above prescription would be used for a diabetic diet. The carbohydrate is very low while the protein and fats are relatively high. In an ordinary diet the carbohydrate would be the largest amount.

Does heat affect proteins and gelatinoids in the same way?

Intense heat coagulates proteins and liquefies gelatinoids.

Why do we call the proteins the most important?

Because they are the only form of food which can build up and repair the body, if we except the fatty tissues, which may be replaced by protein, carbohydrates, or fat.

What are the chief ingredients in fruits?

The chief nutritive constituent of fruits is sugar, and they also contain a small amount of nitrogenous matters, cellulose, starches, organic acids, and a vegetable jelly called pectin.

What class of vegetables is rich in protein?

Legumes, fresh peas and beans, 2 per cent. to 9 per cent. protein.

Legumes, dried—such as peas and beans, from 18 to 35 per cent.

They also supply energy and heat, and a deficiency in protein in diet will cause a condition of malnutrition.

What disease results when the dietary does not contain the vitamin called Fat-soluble A? Water-soluble B? Water-soluble C?

(A) Rickets and xerophthalmia.

(B) Beri-beri.

(C) Scurvy.

What food element, if any, is missing from a meal of sliced tomato with vinegar, lean roast beef, bread, cooked

string beans, cooked spinach, baked potato and apple sauce? How would you remedy it?

Fat is missing from this dietary. It could be supplied by adding cream to the apple sauce and butter to the vegetables.

Name two necessary elements of the ideal diet in addition to proteins, fats and carbohydrates.

Vitamins (also spelled vitamins) and mineral salts are necessary in addition to proteins, fats and carbohydrates in the ideal diet.

What is vitamin D? What is vitamin E? What food substance contains vitamin D? What food substance contains vitamin E?

Vitamin D, also called X substance, is the substance which taken internally, or generated in the body by exposure of the skin to the sun, prevents and cures rickets. It is found in cod-liver oil. Vitamin E is a substance, the absence of which from the diet in experimental animals causes a loss of reproductive ability. It is found in egg yolk.

Mention three diseases which are brought about by lack of vitamins in the diet.

Scurvy by lack of vitamin C. Xerophthalmia by lack of vitamin A. Beri-beri by lack of vitamin B.

Classify according to chief constituents, sugar, butter, milk, eggs, nuts, meat, potatoes, fruit, oatmeal, celery.

Sugar—carbohydrate.

Meat—protein and fat.

Butter—fat.

Potatoes—carbohydrate.

Milk—protein, fat, carbohydrate.

Fruit—carbohydrate.

Oatmeal—carbohydrate and fat.

Eggs—protein and fat.

Celery—carbohydrate.

Nuts—protein and fat.

Mention four food substances useful for laxative effects and four valuable for mineral constituents.

Laxative food substances are honey, prunes, whole wheat, and green vegetables. Foods containing mineral salts are: cheese, rich in calcium and phosphorus; carrots, containing potassium; spinach rich in iron, and uncoated rice also rich in iron.

Name three foods in which the vitamin value is high.

Milk, eggs and orange juice.

Name three classes of vitamins and the function of each, and name three foods included in each class.

Vitamin A—or Fat Soluble A. Found in butter fat, cod liver oil, in glands used for food such as liver and kidney.

Vitamin B—or Water Soluble B. Present in most foods but present in large amounts in yeast, eggs, milk and meats.

Vitamin C—or antiscorbutic vitamin is found chiefly in plants in the leaves, stems and roots. Foods containing Vitamin C in large amounts are orange juice, lemon juice, fresh or canned tomato juice, green salads, cabbage and similar vegetables.

What effect does cooking have on the water-soluble vitamin C?

Prolonged cooking even at a low temperature destroys water-soluble vitamin C.

What food group yields the most heat?

Fats.

(a) Mention five chemical elements in the human body, and (b) tell how they are supplied to the body.

(a) Oxygen, hydrogen, carbon, nitrogen, and calcium.

(b) By foods which contain the same chemical elements, and by air and water.

(a) Could the body subsist on concentrated foods alone?

(b) Give reason for your answer.

(a) No.

(b) The lack of water and taste would render concentrated foods unsuitable for the body to subsist on alone.

(a) What do you understand by a perfect food? (b) What product in nature is provided solely for food?

(a) One that contains a proportion of each of the fundamental food elements necessary for the preservation of life.

(b) Milk.

Give definition of food.

Food is matter taken into the body to supply heat and energy, to build up the body and repair tissue waste.

(a) Name the chief tissue-building foods. (b) The chief heat- and force-producing foods.

(a) Protein, mineral matter, water.

(b) Carbohydrates, fats, proteins.

Name three forms of animal foods.

Milk, eggs, meat.

(a) What do you understand by food value? (b) Name three foods having a high and three having a low food value.

(a) Food value is the relative amount of calories of heat in a particular food.

(b) Three foods with a high food value:

Fat meat.

Sweet foods.

Starchy foods.

Three having a low food value:

Shell fish.

Fruits, as oranges, apples, pears.

Vegetables, as cabbage, spinach, onions.

(a) What do you mean by 5 per cent. vegetables? (b) List five of these. (c) In what disease do these vegetables receive special emphasis? (d) Name three 10% vegetables.

(a) Five per cent. vegetables are those that do not contain more than 5 per cent. of carbohydrates.

(b) Five of them are:

String beans, cauliflower, spinach, Brussels sprouts, tomatoes

(c) They are used in diabetic and obesity diets.

(d) Three 10 per cent. vegetables are turnips, carrots, beets.

Which group should be given in abundance to growing children, and youth, and sparingly after middle life? State reasons.

(a) Milk, eggs and meat, because of growth.

(b) Meat, sparingly after middle life, since growth has ceased.

What interesting and practical fact has been recently demonstrated concerning cabbage juice?

Fresh raw cabbage juice is as rich in vitamins A and B as milk and is also rich in vitamin C. In addition it contains phosphorus.

What are the factors determining the food requirements of the body?

Age, weight and degree of activity are the three principal determinants of the food requirements of the body.

How many calories does a man of average weight doing moderately hard work require per day?

A man weighing 154 pounds in an occupation of moderately hard labor, such as a carpenter, requires 2800 to 3500 calories daily.

What is meant by assimilation?

By assimilation is meant the utilization of food previously digested and absorbed, to build up new tissue and replace tissue loss.

What do the proteins supply our bodies with? Carbohydrates? Fats? Mineral matter? Water?

(a) Proteins build up and repair the body, also give heat and energy.

(b) Carbohydrate is the most important source of energy and heat.

(c) Fat supplies more heat and energy, weight for weight, than carbohydrates, but is not so easily digested.

(d) Mineral matter supplies the salts of the body which are necessary for making the substance of bone and teeth and have a function in assisting in circulating fluids.

(e) Water supplies 90 per cent. of the circulating fluids of the body. It is not burnt up, so does not supply any energy.

Name three foods rich in proteins, three in carbohydrates, three in fats, three in mineral salts, three in iron.

Three foods rich in carbohydrates: Sugar, wheat flour, potatoes. In fats: Pork, butter, nuts. In salts: Carrots, potatoes, cheese. In iron: Spinach, uncoated rice, lean meat.

What are supplied to the body in the following: (a) spinach; (b) orange juice; (c) yolk of egg; (d) bran biscuit?

(a) Iron and mineral salts and cellulose.

(b) Vitamin C and fruit sugar.

(c) Vitamin B and fat and protein.

(d) Vitamin B, iron and cellulose.

What foods contain the most albumin?

Milk, eggs, meat.

What are the most important animal fats?

Butter, cream, the fat of beef, mutton, and pork.

Which of the other food principles would you use in place of fats? Why?

Carbohydrates, because they also produce heat.

What processes are necessary to make food of use to the body?

Digestion and absorption.

What are carbohydrates?

Foods which contain sugar and starches.

In which foods are found the carbohydrates, and in which the nitrogenous?

(a) Starches and sugars.

(b) Proteins.

By what is the amount of energy in food material measured?

1. It is necessary to know its composition, *i.e.*, the percentage of protein, fat and carbohydrate present.

2. From these percentages to determine the weight of protein, fat, and carbohydrate in grams, which can be obtained from a given amount of the food value.

3. To multiply these weights by the energy value of one gram of each of three food principals.

The instrument devised for the measurement of heat is called a calorimeter.

What do you understand as the caloric unit?

The caloric unit is the unit measure of heat, used to denote the energy-giving power of food, and is equivalent to the amount of heat necessary to raise one kilogram of water 1° C., or about one pound of water 4° F.

Give caloric value of the following: Orange, egg, potato, apple, milk (4 ounces).

Orange (large)	100
Egg	75
Potato (medium)	100
Apple (large)	100
Milk (whole) 4 ounces	80

What conditions should be considered in deciding as to the amount of food required by an individual?

In making estimates for any individual, age, weight, size, and shape, season and climate, mechanical efficiency, etc., must be considered, as well as muscular activity, and the basal metabolic rate of the individual.

Why is food necessary for the maintenance of the body?

Food supplies material for the formation and growth of all the tissues and organs of the body and repairs their waste.

Having no measure how would you estimate one-half pint? One fluidounce? One gill?

(a) One cup equals one-half pint, 16 tablespoons liquid, or 8 ounces.

(b) Two tablespoons of liquid—one fluidounce.

(c) One-half cup or 4 ounces—one gill, or 8 tablespoons.

COOKING AND CARE OF FOOD

(a) What food group yields the most heat? (b) What two food groups may enter the blood without chemical change?

(a) Fats.

(b) Water and inorganic salts.

List five points in the selection and preparation of food in order to make it easier to digest.

1. Kind desired by patient.
2. Freshness and good quality.
3. Should be well cooked.
4. Should be seasoned properly.
5. Should be served tastily.

(a) Give four reasons for cooking food. (b) Give five ways of cooking food. (c) Give general rules for the care of food.

(a)

1. To improve the flavor.

2. To soften it, that it may be more readily masticated and digested.

3. To produce chemical changes which increase digestibility.

4. To destroy bacteria and parasites which may be present in raw food.

(b) Boiling, baking, steaming, broiling, roasting.

(c) See below.

Define six of the following: (a) boiling, (b) stewing, (c) steaming, (d) fricasseeing, (e) baking, (f) roasting, (g) frying, (h) broiling, (i) pan-broiling, (j) braizing.

(a) Boiling is cooking in boiling water, 212° F.

(b) Stewing is a long, slow cooking in boiling water below the boiling point, 168° F.

(c) Steaming is cooking in heat derived from the vapor of boiling water. It is of two types. 1. In a steamer (moist heat)
2. In a double boiler (dry heat).

(d) Fricasseeing is a combination of frying and steaming.

(e) Baking is cooking in an oven by means of heated air.

(f) Roasting is cooking before a glowing fire (direct heat)

(g) Frying is cooking in a deep bath of hot fat, temperature ranging 350° to 400° F.

(h) Broiling is cooking over a glowing fire or over or under a flame.

(i) Pan-broiling is cooking meat, in a very hot pan, without fat, turning the meat often.

(j) Braizing is a combination of stewing and baking.

(a) What care should be given to refrigerators, cupboards, and where food is kept? (b) Give in detail the proper care of food before cooking.

(a) All the shelves and compartments should be washed with soap and hot water at least once a week, while every day loose particles of food which have escaped from dishes, etc., should be carefully removed, or if advisable, in certain cases the food and shelves may be removed and wiped or brushed off. The drain-

age pipes must be cleaned with a brush made for the purpose at least once a week. It is advisable to sprinkle borax on the shelves after cleaning. Certain pungent articles cannot be kept in an ice-box without flavoring other foods, such as butter, milk, eggs, etc.

(b) Food should be bought in the freshest and cleanest state, should be placed in clean containers and handled with clean hands. Food should always be washed if there is any suspicion of contamination. Special care of food in respect to fly pollution has become necessary. To obviate this, doors and windows of kitchens and dining rooms must be properly screened and fly paper and similar precautions employed. Dust from the streets of cities abounds in germ life. Vegetables and certain fruits in clusters which cannot be wiped are most likely to be dusty. Washing in a number of waters will usually remove the dust.

What are the points to be observed in cooking (a) meats, (b) cereals?

(a) To obtain the largest amount of nutriment of meat, the following rules should be observed when making broths: 1. Cut the meat into small pieces. 2. Soak in cold water before heating. 3. Use one pound of meat to 1 pint of water. 4. Use steam-tight kettle, simmer that the juice may be extracted, long, slow cooking.

The objective points in cooking meat should be:

1. To retain the juice in baking, broiling, boiling, and frying.
2. To extract the juices in soups.
3. To extract and retain the juice in stews.

(b) In cooking all cereals the following points should be observed: 1. Use of a double boiler. 2. Observe carefully the correct proportion of cereal, water and salt.

Cook at boiling temperature 212° F., watch the time by the clock, and always cook the full time prescribed—preferably longer. Serve attractively.

Describe your method of making an omelet.

Take 1 egg, tablespoonful milk, salt, a speck of pepper, separate egg, beat white to a stiff froth, beat yolk until light, add milk, salt and pepper, lightly fold yolk into the white, put butter in saucepan, so omelet will not adhere to it, lift up at one side with a knife, to see when it is done; when a delicate brown set pan

in oven for a minute to absorb moisture on top. Fold omelet half over, turn on a hot dish and serve immediately.

What care should be given to eggs?

Eggs should be kept in a cool, dry place. Always wash eggs before using.

In cooking eggs, it is well to remember that if the albumin is coagulated quickly, or to too great a degree, it will be toughened.

Which is more easily digested, a raw egg or a soft-boiled egg? Why?

Soft-boiled egg is more easily digested. As the raw does not stimulate the flow of gastric juice, it is not so easily digested as the soft-boiled egg.

How does the excessive use of eggs cause biliousness? Where and how are fats digested?

Eggs contain sulphur. If absorption is delayed, putrefaction follows with the production of sulphuretted hydrogen and ammonia and considerable gastro-enteric disturbance, or biliousness.

Fats are digested in the small intestines, by the pancreatic juice with a ferment which acts on fats, emulsifying them, dividing them into little droplets like cream or cod-liver emulsion, and also splitting the fats into glycerine and fatty acids. The bile and intestinal juices also assist in emulsifying fats.

How would you make a fruit salad?

Any combination of fruit desired may be served with cream dressing. An attractive combination is a banana peeled, cut in half crosswise, cut one half lengthwise, arrange on lettuce leaf, add a little cream dressing and garnish with malaga grapes (cut in half and seeded) and small pieces of English walnuts.

Why should infants not be given starch unless predigested?

Because they have no ptyaline in their saliva until 6 months old, and it is not present in any quantity until later.

Discuss the composition and nutritive value of bread.

The ingredients of bread are flour, water, yeast and salt. It contains a large amount of carbohydrates, a moderate amount of protein, a small amount of mineral matter and almost no fat.

The nutritive value of bread depends not only on its chemical composition, but also on its digestibility; and its digestibility in its turn seems to depend largely on the lightness of the loaf. Bread contains 34 to 40 per cent. of water, and the remainder, about 60 per cent., is of nutritive value. As compared with most meats and vegetables, bread has practically no waste, and is very completely digested.

Is there any difference between the digestibility of the crumb and the crust of bread? Give reasons for your opinion.

Yes; the crust of bread is more easily digested because the starch, which is the principal constituent of wheat bread, when subjected to a high degree of heat is changed into an easily digested substance called dextrin.

Name some of the vegetables containing little or no starch and give reason why they are essential to health.

Lettuce, celery, asparagus, spinach, brussels sprouts, cucumbers, cauliflower.

The green vegetables are valuable not chiefly on account of the amount of nutriment present in them, but for the variety and relish they give the diet. They contain mineral salts and vitamins, and in addition, furnish roughage.

Why is a thorough cooking especially important in cereals?

In order to partially dextrinize them, since they require so little mastication that they do not become sufficiently well mixed with the saliva for the ptyaline to do the dextrinizing. Flavor and appearance are improved, and this provides also that gain in digestibility that comes when appetizing foods stimulate the flow of gastric juice.

Give recipe for making soft batter-bread.

Take 2 cups of cornmeal, scald meal, add 2 eggs well beaten, 1 tablespoonful melted butter, tablespoonful salt, add sufficient milk to make soft batter, lastly add to the batter 1 tablespoonful of baking powder.

Put the above mixture in a deep, well-oiled pan, place in hot oven for about 30 minutes. Serve while hot.

What change is produced in bread by toasting?

Starch when subjected to a high degree of heat is changed into an easily digested substance called dextrin.

Bread is toasted not merely to brown it, but to take out all of the moisture possible.

How would you cook potatoes for an invalid to have them more easily digested?

Bake them; select smooth potatoes of medium size, scrub thoroughly, and place in hot oven. Bake until soft, about 40 minutes. Pierce the skin with a fork in 2 or 3 places, immediately after removal from the oven, otherwise the steam condenses and the potatoes become soggy.

Define, and tell what you think of vegetarianism.

Vegetarians are those who subsist almost entirely upon vegetables, cereals, fruits, and nuts; exceptionally, milk and eggs are added. Persons subsisting on purely vegetable diet for any great length of time are apt to lose in strength, as well as physical and mental vigor and endurance. A purely vegetable diet, if persisted in, is also said to lessen the power of resisting disease.

What are the advantages of a double boiler?

A double boiler should be used when cooking any food that burns easily (as milk), also when foods are to be cooked at low temperatures.

Give recipe for boiling two tablespoonfuls of rice.

Rice water. Two tablespoons of rice, a few grains of salt, 3 cups of cold water, cream or milk. Wash rice by placing it in a strainer and allowing water to run through; soak 30 minutes in cold water; heat gradually to boiling point, and let boil until rice is soft, strain and reheat rice water, season with salt, and if too thick dilute with boiling water, add milk or cream as the case may be.

(a) Why do some cereals require such long cooking? (b) Name three.

(a) In order to partially dextrinize them, since they require so little mastication that they do not become sufficiently well mixed with the saliva for the ptyaline to do the dextrinizing.

(b) Oatmeal, cornmeal, hominy.

What useful function is performed by the indigestible part of vegetables?

The indigestible part of vegetables leaves a residue in the intestinal tract which stimulates peristalsis.

Which is the broader term, protein or proteid?

Proteid is an old name for the supposed essential constituent of all proteins.

(a) What is the preferred method of cooking meat and fish to get the best food value? (b) How can a hard-boiled egg be prepared so that it is both palatable and digestible?

(a) See pp. 501-502.

(b) Wash one egg and put it in a small saucepan of boiling water to cover, remove to the back of the stove or where the water will be very hot, but not boil, allowing egg to remain in water 45 minutes. Chop fine and add one-half teaspoon of butter and a few grains of salt. Serve in lightly heated cup. Prepared in this way it will digest about as quickly as a soft-boiled egg.

What is the relative food value of starches, proteins, and fats?

1 gram of protein equals 4 calories.

1 gram of fat equals 9.1 calories.

1 gram of carbohydrate (starch) equals 4 calories.

MEATS AND FISH

Mention foods that are substitutes for meats.

Nuts, cereals, cheese, eggs, fish and milk.

Why is meat not a perfect food?

Because it is not well balanced in food principles, being excessive in its content of protein as compared with its proportion of fat, carbohydrate and water.

(a) How would you prepare beef juice and what cuts of beef are best for these preparations? (b) Beef pulp?

(a) Select a piece of meat from the rump or top of the round. Remove all fat and broil or warm slightly 1 or 2 minutes, to set free the juices; lay on a plate and cut meat in various directions that more juice may be extracted; then squeeze out the juice

by means of a lemon squeezer into a slightly warmed cup. One pound of meat yields 4 ounces of juice.

(b) Wipe a small piece of steak cut from the top of round, lay it on the meat board and with a sharp knife scrape off the soft part until there is nothing left but the sharp, tough, stringy fibres. Make it into a little flat round cake $\frac{1}{2}$ inch thick and boil 2 minutes. Season with salt and pepper, serve on buttered toast. Do not add salt before cooking, as it toughens the meat.

What can you say of the food value of fish and mention four methods of cooking the same?

Fish is one of the important protein foods and is at its best when fresh and in season. Fish may be classed as oily fish, scaly fish, shell fish.

Fish is less stimulating than meat, for which reason people tire of it. It is less nutritious than meat, except the oily fish. It offers variety to the protein ration. Fish may be boiled, fried, broiled or baked.

What is the preferred method of cooking meat and fish to get the best food value?

Meat and fish are most tender and readily digested when cooked at a low temperature.

How would you cream oysters for one person?

One-half cup thin cream or rich milk. 1 teaspoon butter, 8 oysters, 1 tablespoon of flour, $\frac{1}{4}$ teaspoon salt. Wet the flour with a little cold milk; scald the cream, add the flour and cook well. Just before serving add the drained oysters and cook until they grow plump and the edges curl, add the salt and butter. Serve on rounds of toast.

How ought beef, chicken, and fish appear when in a healthy condition?

In fresh fish the gills are red, the eyes bright and protruding, the flesh is firm, and there is no unpleasant odor. The first two characteristics disappear after the fish is out of water a short time.

If the last two characteristics are not present the fish should not be used.

In selecting a chicken the cartilage at the end of the breast bone must be soft and pliable, the skin smooth and feet soft. There should be an abundance of pin feathers.

Test for good beef: the flesh is firm and fine-grained in texture, bright red in color when first cut, and on exposure to air looks juicy and well mottled and coated with fat, and the fat is of a yellowish color and firm.

How would you roast a piece of beef?

Prepare meat, put on rack in dripping pan, dredge with salt and flour, and cook in hot oven until surface is seared; then reduce the heat and cook slowly the required time. Beef rare—13 minutes per pound. Beef rare over 5 pounds, 18 minutes per pound.

Give some general rules for preparing meats.

In boiling meats the temperature of the water should not exceed the temperature necessary for the coagulation of the proteins.

Roasting—the meat is first exposed to a high temperature, and afterwards cooked slowly, thus the outer layer coagulates at once, preventing the escape of juices.

Baking resembles roasting, except by the latter process the heat is applied around the meat instead of only on one side.

Stewing—the meat is cut into small pieces and placed in a small quantity of water. The water is heated slowly, but not allowed to boil. Broiling and roasting are similar, except in the former smaller portions are used and the process is more rapid, a large surface being exposed to the direct action of the heat.

If you wish to keep juice in meat, how do you cook it?

Both sides of the beef should be seared quickly to prevent the escape of the juices, but the interior should not be cooked.

What is sweetbread?

Sweetbreads are the pancreas and thymus glands of the calf.

MILK—WATER—ETC.

How would you remove the casein of milk? How the fat?

The casein may be removed by precipitating it through adding rennet, or essence of pepsin, while the milk is kept warm, and by then straining out the solids.

The fat may be removed almost completely by centrifuging milk in a cream separator, or less completely by skimming after the milk has stood on ice for several hours.

(a) How would you remove the protein portion of milk;
(b) the fat?

(a) The principal protein in milk is casein; it is coagulated or precipitated by the addition of acid, or in neutral solution by rennet.

(b) On standing the fat rises to the top and forms cream, which can be removed by a cream ladle.

What diseases may be communicated to man through the medium of milk?

Typhoid fever, tuberculosis, scarlet fever, diphtheria.

What is synthetic lactic acid milk? How is it made? What are its advantages, if any?

Synthetic lactic acid milk, is a milk secured by the addition of lactic acid to sweet milk in distinction to that produced by inoculation of milk with lactic acid producing bacilli. It is made by adding one teaspoonful of lactic acid U.S.P. to one-half an ounce of water and gradually adding this to a pint of clean cow's milk, beating it up with a cream whip after each addition. Its chief advantage lies in the fact that it may be prepared in a few minutes.

Why does prolonged boiling give milk a characteristic taste?

The taste produced in milk by prolonged boiling is largely due to an incomplete caramelization of the lactose, and probably also to the action of the heat on the lactalbumin and casein.

Compare mother's and cow's milk.

Mother's milk contains 1.5 to 2 per cent. of proteins on an average. In cow's milk there is about 3.5 per cent. protein of which five-sixths is casein. The casein of mother's milk is coagulated in the stomach in small flocculent masses. Cow's milk is coagulated in large masses. Milk sugar is present in mother's milk in a very constant proportion of 6 to 7 per cent. In cow's milk it averages 4.5 per cent.

Why is the value of skim milk much less than that of whole milk?

Because the greatest food value in calories is in fat. Skim milk has 13 calories to each ounce as compared with 21 calories in whole milk.

(a) Mention methods used to render milk more easily digested. Explain the reason for, or principle underlying each method. (b) Mention important points to remember when heating milk and give reasons.

(a) 1. The addition of aerated water, the gases of which keep the caseinogen particles apart and so prevent the formation of hard curd.

2. The addition of barley water, the granules of the barley flour accomplishing to a great extent the same result owing to their mucilaginous nature.

3. Diluting the milk with pure water has to a certain degree the same effect, as also the addition of lime water or milk of magnesia. These render the milk alkaline and prevent the formation of a hard curd.

Heating the milk causes certain changes in the caseinogen which interfere with the clotting of the milk by the stomach rennet. "Peptonizing" the milk is done by the addition of pancreatin until it is partly digested, and is a common method of predigesting it.

(b) It must be kept covered to prevent the escape of gases; it must not be heated to a temperature exceeding 168° F. to avoid the coagulation of the lactalbumin and consequent loss of albumin and salts.

How would you peptonize milk and why is bicarbonate of soda used?

Dissolve a tube of Fairchild's peptonizing milk powder by rubbing and stirring with a spoon, then add the milk and cream; mix well; heat in a saucepan with constant stirring until blood-warm—not too hot to be agreeably borne by the mouth; keep at this temperature for 10 minutes, then bring quickly to a boiling point; pour at once into a clean bottle, shake thoroughly, cork lightly, and place directly on ice in a very cold place.

In order to predigest in alkaline solution without coagulating, the milk pancreatin is substituted for pepsin. Pancreatin is composed of pancreatic extract 5 grs. and sodium bicarbonate, grs. xv.

Describe the care of milk.

(See pages on "Hygiene.")

What causes milk to become sour?

It is caused by acid fermentation resulting from the breaking down into lactic acid of the lactose of the milk by bacteria.

(a) Why is milk of special value as a food for an invalid?

(b) Give reasons why it is not a perfect food for a healthy adult.

(a) Because it contains all the compounds necessary to support life, in good proportions and in very assimilable forms.

(b) For the active adult it is undesirable as the sole diet because the proportion of water is so high that large quantities have to be taken to supply the necessary energy, because the proportion of protein is unnecessarily high, and because it furnishes no indigestible residue to supply bulk for the perfect functioning of the intestines.

How would you sterilize milk?

Sterilization is accomplished by keeping milk at boiling temperature, 212° F., for 10 or more minutes, preferably in the vessel in which it is to remain.

Give one method of preparing predigested milk.

Peptonized milk (immediate process): Put 2 tablespoons (1 oz.) of cold water into a goblet or glass, dissolve in this one quarter of the content of a peptonizing tube (Fairchild's), add 8 tablespoons (4 oz.) of warm milk, *not boiling*—drink immediately, sipping slowly.

How may milk be contaminated?

Absorption of bad odors from barn at time of milking or from foods in ice-box may render milk unpalatable, but the chief source of bacteria in milk is from the dirt which gets in at the time of milking, and from milk being placed or handled in dirty utensils.

Give five ways of serving milk to a patient.

Peptonized, whey, buttermilk, koumiss, milk diluted with any of the aerated waters.

What food contains all the elements necessary for the maintenance of life?

Milk.

How long should suspected water be boiled for drinking purposes?

For five minutes.

(a) What is the composition of water? (b) Boiling point and freezing point? (c) How would you render boiled water more palatable? How boil water for tea? (d) Should tea be an infusion or decoction?

(a) Pure water is composed of 2 parts of hydrogen and 1 part oxygen.

(b) 212° F. (sea level), boiling. 32° F., freezing.

(c) Boiled water may be aerated by pouring from one pitcher to another, thereby rendering it more palatable. When water is boiled for any length of time its air and some salts are lost, and consequently beverages made with it are lacking in taste.

(d) Tea should be an infusion.

(a) Does water undergo any change in the body? (b) How can water be purified? (c) Why is water so necessary to the system?

(a) No.

(b) The best method of purification is by distillation. It also may be purified by means of filtration, charcoal and sand being used for this purpose.

(c) Water is absolutely necessary as a solvent and also (1) to quench thirst; (2) to nourish; (3) to regulate body temperature; (4) to assist carrying off waste products; (5) to maintain the proper degree of dilution for all fluids of the body; (6) to stimulate the nervous system and various organs; (7) to form a part of all life, as metabolism cannot go on without it.

What is absorption?

The passage of the ingredients of the digested food into the blood-vessels and lymphatic vessels.

(a) Of what value are fruits as food? (b) Of what value are vegetables as food? (c) What is essential in the cooking of cereals?

(a) Fresh fruits are chiefly valuable for their refreshing, appetizing qualities, and for their mineral constituents. The organic acids form carbonates in the body and thereby assist in the

regulation of the body processes. Vitamin C is present in citrus fruits.

(b) The chief nutrients are starch and sugar. Vegetables give bulk to food and possess antiscorbutic properties.

(c) Cooking improves cereals. Flavor and appearance are improved and they are also rendered more digestible.

SERVING OF FOOD

What conditions would you consider essential to success in food serving?

1. The sick room should be orderly.

2. All food and drink should be offered from scrupulously clean glasses or dishes. These should be as dainty as possible, and the food must be attractive in appearance. When the nature of the dish permits it may be garnished with a sprig of green. The napkins and linen should be spotless. The internal surface of the glasses and cups should be wiped dry before they are offered to the patient.

3. The hands and face of the patient should be wiped with a moist cloth, and then dried before food is given, and lips cleaned after the meal is completed.

SPECIAL DIETS

(a) What special foods are usually used in the treatment of anæmia? (b) What type of diet in jaundice?

Foods containing a comparatively large amount of iron, such as milk, eggs, meats, especially liver, green vegetables, beans, peas, cereals, and fresh fruits are the most important articles of diet.

(b) Jaundice requires a low fat diet.

Give the essential points to be observed in diets for gastric ulcer.

(a) The diet in gastric ulcer should be non-irritating and consist largely of milk at first. Later soft rolls, zwieback, and scraped rare meat are allowed. Still later vegetable purees are given. Highly seasoned food, raw fruits and acid fruits cooked or raw are to be avoided (Boaz).

What is the Lenhartz diet?

This is a treatment for gastric ulcer. The patient is placed in bed with an ice bag over his stomach. This is kept in place for

two weeks. On the first day, even though hæmorrhage has occurred, 200 c.c. of iced milk are given, a teaspoonful at a time. Two ice cold raw eggs beaten up with sugar are also given on the first day. Each day the milk is increased by 100 grams and each day an additional egg is given. On the 6th day scraped raw meat is added, and the amount increased the following day. On the 7th and 8th days well-cooked rice and softened zwieback are added. When a litre of milk is being given the quantity is not increased. Raw ham and butter are added on the 10th day.

Give post- and pre-operative dieting of patients.

The patient is put on liquid diet 24 hours before the proposed hour of operation, if the operation is abdominal; otherwise the patient may have a very light supper, and not only no breakfast the morning of the operation, but nothing by mouth for at least 6 hours previous to the operating hour. After operation nourishment is not administered for several hours after reaction from anæsthetic. Albumin water is generally used at the start, being given first in teaspoonful doses, increased as circumstances permit until several ounces have been given. Other liquids are not usually administered until the completion of 24 hours after operation, at which time full liquid diet (without milk) is instituted.

(a) Name five foods included in a high caloric diet. (b) Name a condition in which a high caloric diet should be used.

- (a) Cream Cereals Ice Cream Chocolate Eggs
(b) Malnutrition

Give a list of foods to be avoided in cases of obesity.

Sweets; rich desserts; pastries; fat meat; starchy foods, as potatoes, rice, white bread, etc.

What conditions call for: high caloric diet, low protein diet, low carbohydrate diet, salt poor diet, liver diet?

High caloric diet is called for in malnutrition.

Low protein diet is called for in nephritis.

Low carbohydrate diet is called for in diabetes.

Salt poor diet is called for in nephritis with edœma.

Liver diet is called for in pernicious anæmia.

Why are fluids given in most fevers?

Solid food is not suitable for fever patients, as it usually causes vomiting and indigestion. To properly nourish a patient it is necessary that the food be easy to take, easy to digest and easy to assimilate. Water is required not only to quench thirst, but to aid in the elimination of waste products, which, owing to excessive metabolism, are increased.

What is the Karell Diet?

The Karell diet consists of 800 c.c. of milk given in 24 hours, as the only food or liquid allowed. It is used in nephritis with oedema and takes its name from a Russian physician.

What is the cause of loss of weight in fevers? How may this be minimized?

Increased tissue destruction causes loss of weight in fevers. This may be minimized by feeding easily digested foods containing as much fat and carbohydrate as can well be digested.

Discuss the diet in pellagra.

The diet in pellagra must be moderately high in protein and must contain foods rich in vitamins, as clean fresh milk, beef juice, orange juice, lettuce and other greens, uncoated rice, rare roast beef, and cream cheese. Since Goldberger has discovered that brewers' yeast contains the P. P. (pellagra preventing) vitamin, this yeast, or tablets containing it, are invaluable in arresting the progress of the disease.

What foods would you avoid in the diet for the following conditions and why: (a) Diarrhoea, (b) constipation, (c) gastritis, (d) nephritis?

(a) Coarse, indigestible foods, especially those containing a large amount of cellulose, must be avoided, such as cabbage, turnips, carrots, pickles, as they have a tendency to stimulate the intestines. Also cold drinks, carbonated waters, fruits and salads.

(b) Foods that leave little residue in the intestines, such as cocoa, chocolate, tea.

(c) The diet should vary according to the character of the gastritis, in those cases in which the gastric secretion has entirely or almost entirely disappeared. Protein food is digested with difficulty. Among the things most rigidly excluded from the diet may be named coarse vegetables, fried foods, cakes, pudding and

candies, meats, like pork, that contain too much fat, pickles, cabbage, chicken salad, lobster, cucumbers, etc.

(d) Avoid giving foods that irritate the kidneys, such as very acid foods, green vegetables, liver, strong meat broths.

What foods are especially beneficial in the treatment of anæmia?

Foods containing a relatively large amount of organic iron, such as egg yolk, liver in moderation, spinach, uncoated rice, etc.

How should you feed an unconscious patient? Give caution.

They should be given only liquid nourishment and fed with a spoon, or through a catheter. If the jaws are set a medicine dropper may be used. Not over a teaspoonful should be given at once, and the nurse must be sure it is swallowed before she gives more.

What kinds of food would you give in cases of diarrrhœa?

Food which is nearly all absorbed is indicated in diarrrhœa. The most commonly used foods are flour porridge, cooked white of egg, boiled milk, toasted crackers, rice and chocolate.

Describe the proper method of preparing toast for a patient.

The correct way to make toast is to use stale bread cut in uniform slices, and to dry it thoroughly before browning. In ordinary bread (wheat) starch is the chief constituent. When starch is subjected to a high degree of heat it is changed into an easily digested substance called dextrin.

In the diet of a diabetic what replaces the amount of carbohydrate usually taken by the normal person? May the carbohydrate be entirely replaced by fat?

In the diet of the diabetic well balanced quantities of fat and protein are given to supply the energy lost by a reduction of the carbohydrate intake, and the total caloric intake is reduced at first. Great quantities of fat cannot be given the diabetic, because in such a case an accumulation of ketone substances would result and bring about the condition of the body known as acidosis, or more properly ketosis.

Mention three diseases requiring special diet. Give outline of type of diet for each.

DISEASE.	TYPE OF DIET.
Scurvy	Containing vitamin C—orange juice, tomato juice, etc.
Acute Nephritis	Low protein type—milk, cereals, bread, etc.
Diabetes	Balanced diet, low in carbohydrate and fat, controlled by estimation of blood sugar.

What is an average energy requirement for a nurse weighing 130 pounds? (estimate).

Eighteen to twenty calories per pound; 2340 to 2600 total calories a day.

What is the Sippey diet?

This is an alkaline reinforced diet used in gastric ulcer. Three ounces of equal parts of milk and cream are given every hour from 7 A.M. to 7 P.M. to the patient who rests in bed. After several days soft boiled eggs and well cooked cereals are added. At the end of ten days in addition to hourly cream-milk feeding the patient will be receiving daily 3 eggs and 9 ounces of cereal. The diet is gradually enlarged. A powder consisting of alkalies, as soda and magnesia, is given between feedings.

Name ten liquids which may be given in a liquid diet.

Milk—chicken broth.

Whey—oyster soup.

Cocoa—beef broth.

Orangeade—egg-nog.

Malted milk—lamb broth.

Give a list of articles of food for a simple dinner, planned so as to include all the important food elements, and tell in which dish the greater amount of each is contained.

Beefsteak, mashed potatoes, spinach, fresh tomatoes, and lettuce, bread, butter, baked apples, coffee. Beefsteak, *protein*; mashed potatoes *carbohydrates*; spinach, *iron*; fresh tomatoes, *carbohydrates* and vitamin C; butter, *fats*; baked apples, *carbohydrates*. Beefsteak contains more protein than the other foods; in mashed potatoes and bread carbohydrates predominate; in spinach,

iron, and we get the most of our fat from butter. Other vitamins and salts are found in milk, lettuce and spinach.

Give a wholesome bill of fare for a dinner for a convalescent operative patient and the name of food principle or principles in each article of diet.

Squash, baked potatoes (stuffed), asparagus tips with cream butter dressing, fresh tomato salad, baked custard. 1. Carbohydrates, tomato. 2. Protein, squash. 3. Carbohydrates, potatoes. 4. Cellulose, asparagus. 5. Fats; protein; carbohydrates, baked custard.

Give general rules for feeding the sick.

1. Appeal to the sense of sight.
2. Appeal to the sense of taste.
3. Temperature of food should be correct.
4. Digestibility should be considered.
5. Nutritive value should be ample.

Name three diseases requiring special diet. Give proper menu for one meal in each disease: (a) diabetes, (b) chronic rheumatism, (c) tuberculosis.

(a) Bouillon, 6 ounces; roast beef, $7\frac{1}{2}$ ounces; butter $2\frac{1}{2}$ drachms; green salad, 2 ounces; vinegar, 2 drachms; olive oil, 5 drachms, or spinach with mayonnaise, larger portion; whiskey, 5 drachms diluted with 13 ounces of water.

(b) Raw oysters, small portion broiled ham. Boston brown bread, spinach, celery, junket without sugar, appolinaris water.

(c) Bouillon, chops, baked potato (stuffed), green peas, lettuce—salad with French dressing, baked custard, bread and butter.

Why are drinks made from fruit juices especially valuable for fever patients?

Some of them, as lemonade and orangeade, have an added value in their diuretic and diaphoretic action. The organic acids are useful in constipation, as they stimulate peristaltic action.

Give a list of fruits to be recommended for laxative effects.

Apples, oranges, rhubarb, pineapple, prunes.

(a) In what condition is fat a valuable article of diet?
(b) When must fats be withheld or given in limited proportion?

- (a) In diabetes and malnutrition.
- (b) In obesity and diabetes.

(a) What would you give as first meal when meat is added to typhoid diet? (b) How would you prepare and serve?

- (a) A broiled lamb chop—or tender sweetbread—broiled.
- (b) Put sweetbread in bowl, cover with cold water, let stand one hour; drain, remove fat pipes and membrane. Cook in boiling salted acidulated water 20 minutes, allowing $\frac{1}{2}$ tablespoon vinegar and salt to a pair of sweetbreads. Then drain again, plunge into cold water, remove from cold water, dry on a towel. Split $\frac{1}{2}$ sweetbread lengthwise, sprinkle with salt and pepper, place on greased wire broiler, broil over a clear fire. For serving spread with soft butter, sprinkle with salt, garnish with parsley.

Name one disease that results from each of the following errors in diet: (a) insufficient food, (b) lack of fresh food, (c) overeating, (d) improperly balanced diet.

- (a) Malnutrition, (b) scurvy, (c) dyspepsia, (d) rickets.

Give menu for three meals for diabetes.

Breakfast—Gluten breakfast food, fried sour apples, ham and eggs, coffee.

Luncheon—Creamed sweetbreads, gluten bread and butter, tea, cream.

Dinner—Fish croquettes, tomato sauce, boiled chicken, chestnut dressing, baked onions, tomatoes, dressed celery, cheese, coffee.

Why is diet so important in nursing tuberculosis?

On account of the great destruction of tissues in the consumptive, there should be given a generous supply of tissue-forming foods.

Why is mixed diet necessary to health?

In order to get all the elements which are necessary to maintain the functions of the body, *i.e.*, fats, proteins, carbohydrates, mineral salts and vitamins.

Why are nitrogenous foods given sparingly in nephritis?

Because of the difficulty the system has of getting rid of its waste material, especially the nitrogenous waste.

Describe the diet of a patient with scarlet fever. What food product is omitted at what stages, and why?

Milk, until after the scaling period.

The various modifications of milk may be used. For the thirst plain or carbonated waters may be given freely. One of the chief dangers of scarlet fever is inflammation of the kidneys, therefore the diet should be bland and unirritating, and contain little or no meat or meat juices.

What chemical element should be included in the diet to prevent goiter?

Iodine should be included in the diet to prevent goiter.

Give list of foods for laxative diet.

Fruits and vegetables.

The articles of food which are useful as laxatives are spinach, peas, onions, celery, asparagus, tomatoes, oatmeal, cornmeal, honey, apples, peaches, pears, oranges, dates, prunes, figs, berries, buttermilk.

Why are green vegetables which contain very little nourishment essential to health?

They nearly all possess strong individual flavors and are rich in vitamins and organic iron.

Give three menus for a dinner for a patient allowed solid food, but no meat.

Dinner—Cream of pea soup, broiled mackerel, baked potato (stuffed), spinach, cheese and lettuce salad, fruit and coffee.

Clam bouillon, baked white fish, mashed potatoes, string beans, cucumber and onions with French dressing, baked custard, coffee.

Cream of celery soup with croutons, escalloped oysters, creamed cauliflower, fresh tomatoes on Romaine lettuce, French dressing, wine-jelly, coffee.

How would you feed a typhoid patient the first week he gets solid food?

Soft custards, milk toast, soft-boiled or poached egg, gelatine white meat of chicken, baked potato.

Give substitutes for starch and sugar.

Substitutes on the market for sugar are saccharine and sweetina.

Gluten flour may be substituted for starch.

State in detail how to cook and serve a steak, a chop, and a piece of bacon.

(a) Wipe, trim off the superfluous fat and remove a little of the bone. Heat and grease the broiler with some of the fat. Place meat in broiler with fat edge next to the handle and broil over a clear fire, turning every 10 seconds for first minute, holding broiler near the coals that the surface may be well seared, thus preventing the escape of the juices; then cook at a lower temperature, holding the broiler higher. Steak 1 inch thick will take 5 minutes if liked rare, 8 minutes if well done. Serve on a hot platter and season with butter, salt and pepper.

(b) Broil same as steak. Season with salt and pepper; but no butter, as the meat is rich in fat and does not require it (mutton and lamb).

(c) Heat saucepan very hot. Put in strips of very thin sliced bacon. As fat is drawn out, pour it off into cup; cook bacon until crisp and brown. Drain on brown paper.

State fully your advice to a mother as to diet, etc., for a child 6 to 8 years old suffering with defective nutrition.

Defective nutrition might be due to some underlying condition, such as syphilis, adenoids, tonsils, follicular tonsillitis, etc.

1. Allow time for meal.

2. See that the food is thoroughly masticated.

3. Do not allow nibbling between meals.

4. Do not give the child rich and indigestible food.

Too much meat is undesirable, as sufficient protein is obtainable from milk and eggs, porridge and cream, bread and butter.

Give proper diet for a person suffering from colitis.

The cause and form of colitis should be considered and the diet prescribed by the attending physician. Milk, bread and gruels are usually allowed.

Why is the salt-free diet used in case of general œdema?

It is believed when the kidneys are diseased they often fail to eliminate excess sodium chloride from the blood and it passes

516 STATE BOARD QUESTIONS AND ANSWERS

into the tissues and causes oedema, therefore we eliminate salt from the diet.

(a) Name five causes of emaciation. (b) List fifteen foods used in treatment of emaciation.

(a) 1. Starvation.

2. Long continued high fever.

3. Pulmonary tuberculosis in terminal stages.

4. Untreated severe diabetes.

5. Illness in which there is long continued diarrhoea.

(b) Fifteen foods:

Bread	Butter	Beans
Cereals	Cream	Apples
Milk	Potatoes	Bananas
Eggs	Rice	Fish
Meat	Peas	Fruits

(a) Give the dietetic treatment of acidosis. (b) What is this condition usually the result of?

(a) The dietetic treatment of acidosis includes administration of glucose in the form of orange juice and large quantities of fluids.

(b) This condition is usually due to the incomplete combustion of fats which frequently occurs in diabetes.

(a) Is it advisable to serve cocoa frequently to invalids?

(b) Give reasons for your reply. (c) Give method of preparing and serving an egg-nog.

(a) No.

(b) Cocoa by reason of the large proportion of theobromine, sugar and fat contained in it, when used in excess, is likely to produce indigestion.

(c) Take 1 egg, separate white and yolk, beat separately, add teaspoonful sugar, 2 teaspoonfuls brandy, or if not allowed, a little Tr. Vanilla, add beaten whites all but about 1 tablespoonful. Add milk, $\frac{3}{4}$ glass, stirring constantly, place white of egg on top, sprinkle with nutmeg, serve at once.

What articles do you understand to be included in light diet? Outline a nourishing diet for a patient for 24 hours who is permitted only light diet.

Baked potatoes, soups, fish, white meat of fowl, toast and crackers, sweetbreads, chops, scraped beef, custards, cooked cereals,

soft eggs, cream with milk toast, baked apples, rice, jelly or gelatine, ice cream.

Breakfast—Cereal with cream, orange juice, soft-boiled eggs, toast, coffee.

Dinner—Baked potato, creamed sweetbreads, celery, baked custards, bread and butter, milk (glass).

Supper—Tea (milk), toast, baked apples with cream, poached egg.

What would you include in a diet for a patient suffering from Bright's disease?

During the acute stage, milk, and a limited amount of fluids. To relieve thirst, water. In less severe cases, rice, cornmeal, porridge, crackers, may be added, and butter, sugar, grape juice or other fruit juices may be used. Light vegetables—spinach is perhaps the best—young peas, string beans. Meat and eggs are added last, then as a rule once daily.

What disease is usually given a carbohydrate-free diet?
Diabetes.

Mention three points to consider in making out a menu.

1. Personal idiosyncrasies must be considered.
2. The best means of stimulating the appetite is to have good, nutritious food, well cooked and attractively served.
3. In order to thoroughly satisfy the needs of the body the diet must be varied.

Write one day's diet to be given in case of high blood pressure.

In this condition diets low in nitrogen are usually presented. If the heart is in good condition, increased amounts of water are usually given to aid elimination.

One day's diet:

Breakfast:	Milk or decaffeinated coffee
	Baked apple
	Toast and butter
Dinner:	Vegetable soup
	Potato, baked
	Cabbage, tomatoes
	Small portion of chicken or fish
	Fruit or cornstarch pudding

Supper:	Milk
	Toast or crackers
	Carrots, peas
	Baked custard

What articles of diet do you favor and what avoid for a person who is habitually constipated?

Chronic constipation may be relieved by careful attention to the diet, using those foods that leave a bulky residue in the intestines, such as buttermilk, meat, fish, fresh fruits, fresh vegetables, salads with oil, coarse cereals.

Avoid cheese, nuts, tea, sweets, milk, pastry, rice puddings, new bread, eggs, liver, pork, salt, smoked or preserved meats. Water increases bowel secretion.

What are the four methods of feeding infants?

Maternal breast feeding.

The wet nurse.

Breast feeding supplemented by bottle feeding.

Bottle or artificial feeding (modified milk).

Give three points to be considered in preparation of invalid's tray.

1. The food to be served should be properly cooked. Hot foods served hot, cold foods should be served cold.

2. Avoid serving too many things on tray. The tray should be covered with fine linen damask without wrinkle or blemish; daintiest china and glassware should be used.

3. Only a small quantity of food should be served at one time.

(a) Give a typical light diet; (b) soft diet; (c) full diet.

(a) Oranges, coffee with milk and sugar or tea, milk, cream of wheat, eggs soft-cooked in shell, toast.

(b) Custard, tea, coffee, cocoa, farinaceous puddings, cereals, soft eggs, milk toast.

(c) Anything the hospital serves to patients for whom special orders have not been given, including meat, fish, vegetables, cooked and raw, desserts, tea, coffee, soup.

What articles of food are especially to be avoided in nephritis?

Large amounts of protein foods must be stopped, as meat and eggs.

(a) Give some of the foods you would give a chronic diabetic patient; (b) Some you would avoid.

(a) Some of the foods which may be given are chicken, fish, fat beef, ham, bacon, almond bread or cakes, string beans, spinach, lettuce plain or dressed with oil, cucumbers, onions, tomatoes, asparagus, pickles, olives, custards without sugar, tea or coffee without sugar, buttermilk.

(b) Some foods usually restricted are liver, sugar, sweets or starches of any kind, whether bread or biscuits, corn bread, potatoes, beets, parsnips, peas, carrots, pastry, ices, porter, peanuts, port, cider, cream and fat.

Give diet during puerperium.

Immediately after labor in a normal case milk diet is given for first six hours, then milk toast, dry or buttered toast if desired with tea, coffee or cocoa. On the second day meat broths, beef tea, soft or poached egg, raw or stewed oysters, wine-jelly, boiled custard.

During next few days chicken, scraped beef or mutton, baked potatoes, rice and cereals may be given. By the end of the week a gradual return to ordinary diet may be made.

Give one day's bill-of-fare for a tuberculous patient who is up and about.

8.00 A.M., milk taken slowly, 2 glasses, with a roll or toast and butter, and a little marmalade.

10.00 A.M., cup of broth, few bites of fish, beef, potato, a mouthful or two of dessert.

Patient may aid appetite by taking a glass of wine.

4.00 P.M., two glasses milk slowly sipped.

7.00 P.M., like dinner but much less.

A plate of soup, chop, little preserve with a glass of wine.

Bedtime, two glasses milk sipped slowly.

Give one day menu for a convalescent from enteric fever.

Milk, 5 ounces, 9, 11 A.M., 1, 7 P.M.

Cream, 3 ounces, 10 A.M., 1, 4 P.M.

520 STATE BOARD QUESTIONS AND ANSWERS

Lactose, 15 gm.

11 A.M., two eggs, mashed potato, 2½ oz.; or custard, 8 oz.;
or creamed chicken, toast, butter; 5.00 P.M., toast, cereal, cream.

Outline a diet for (a) diarrhœa, (b) constipation.

DIARRHŒA

- 8.00 A.M., 200 gm. Cocoa (cooked in water).
2 soft-boiled eggs.
50 gm. toast.
- 10.00 A.M., 200 gm. broth with one egg.
30 gm. Panopeptone.
- 12.00 M., 250 gm. broiled chicken.
30 gm. toast.
200 gm. mashed potato.
- 4.00 P.M., 50 gm. Panopeptone.
1 soft-boiled egg.
200 gm. cocoa (cooked in water).
50 gm. toast.
- 7.00 P.M., 100 gm. rice cooked in bouillon.
200 gm. sweetbread.
50 gm. wheat bread.
- 9.00 P.M., 100 gm. raw scraped beef.
50 gm. Panopeptone.
50 gm. toast.

CONSTIPATION

- 6.00 A.M., 4 gm. orange juice.
- 8.00 A.M., 300 gm. milk with coffee, two soft-boiled eggs.
150 gm. Graham bread.
40 gm. butter.
- 10.00 A.M., 400 gm. cider.
- 12.00 M., 200 gm. broth with one egg.
100 gm. steak.
100 gm. carrots.
100 gm. beans.
150 gm. Graham bread.
200 gm. stewed apples.
- 4.00 P.M., 400 gm. buttermilk.

7.00 P.M., 100 gm. scraped beef.
 150 gm. Graham bread.
 200 gm. stewed prunes.
 300 gm. cider.

9.00 P.M., 40 gm. figs or 400 gm. buttermilk.

Outline a breakfast, dinner and supper for a patient suffering from chronic constipation.

Breakfast—Apple with peeling on, oatmeal or Pettijohn, butter, whole wheat bread, eggs, coffee.

Dinner—Vegetable soup, beef or lamb, carrots, beans, lettuce, butter, whole wheat bread, prune pudding, cider.

Supper—Cold meat, whole wheat bread, stewed apples, buttermilk.

Name a substitute for sugar for a diabetic.

Saccharine, the official name for which is glucidum.

Give breakfast, dinner, and supper for a diabetic patient.

Breakfast—Gluten porridge, steak, scrambled eggs, gluten toast, coffee.

Dinner—Oysters, celery soup, gluten biscuit crisps, boiled onions, spinach, shrimp and lettuce salad, olives, baked custard, coffee.

Supper—Tomato mayonnaise, gluten nut sandwiches, iced tea with sweetina.

How would you give nutrient enemata?

(See "Medical Nursing.")

BEVERAGES AND BROTHS

How would you make beef tea?

One pound of beefsteak from round, cut in small pieces, 2 cups cold water. Salt, put in canning jar, add cold water, cover and let stand 20 minutes. Place in kettle of cold water, having water surround jar as high as contents. Heat water gradually, keeping temperature at 130° F. for 2 hours, then increase temperature slightly until the liquid becomes a chocolate color and the albuminous juices are slightly coagulated.

(a) How do you make a cup of tea? (b) Coffee? (c) Cocoa? (d) Albumin?

(a) One teaspoon tea, $\frac{3}{4}$ cup freshly boiling water. Heat a cup, pour in tea, pour on water, cover and let stand in a warm place from 3 to 5 minutes. Strain into a hot cup and serve with sugar, and cream or milk.

(b) Two tablespoons coffee finely ground, 1 cup freshly boiling water. Scald a coffee pot for making filtered coffee. Put in coffee, pour water over it, let stand until water filters through. If preferred stronger refilter. To serve: Put sugar in cup, add cream and pour coffee.

(c) One teaspoon breakfast cocoa, $1\frac{1}{2}$ teaspoons sugar, $\frac{1}{3}$ cup boiling water, $\frac{1}{2}$ cup scalded milk; mix cocoa, sugar and a few grains of salt, add water gradually, while stirring constantly. Bring to boiling point and let boil 1 minute. Turn into scalded milk and beat 1 minute, using a Dover egg beater.

(d) White of 1 egg, $\frac{1}{2}$ cup cold water. Stir egg with silver fork to set free albumin, that it may easily dissolve as water is gradually added; strain and serve. A few grains of salt may be added if desired.

(a) Write of precaution to be observed in cooking of proteins in order to insure digestibility. (b) Would starches be digestible by the same process of cooking? (c) Give reason for your reply.

(a) Albumin tests demonstrate that albuminous foods are most tender and readily digested when cooked at a low temperature, but when coagulated at too high a temperature are tough and indigestible.

(b) No.

(c) The digestibility of protein seems to be lessened by cooking at high temperature, but the starch can be made almost perfectly digestible, as high temperatures change starch into dextrin.

Would you make tea as an infusion or a decoction?

Tea should be made as an infusion.

State correct method of preparing tea, coffee, lemonade, and malted milk.

(a) One teaspoon tea, $\frac{1}{2}$ cup freshly boiling water; put tea in tea ball, lower into cup, let stand 1 minute, then remove. Serve.

(b) Two tablespoons coffee finely ground, 1 cup freshly boiled water. Scald pot, put in coffee, pour over water, let stand in warm place until water filters through. Serve with cream.

(c) One and one-half tablespoons syrup, 2 tablespoons lemon juice, $\frac{3}{4}$ cup cold water; mix syrup and lemon juice, add cold water.

(d) Mix 1 tablespoon malted milk powder with a little tepid water to make a smooth paste, add $\frac{3}{4}$ cup (hot or cold), stirring briskly.

Why should tea never be allowed to boil and why served at once after being made?

Boiling the tea extracts the tannic acid. By pouring boiling water on the leaves and allowing it to stand 5 minutes, you are less liable to have a great amount of the tannic acid extracted.

Give recipe for egg-nog; lemon albumin.

(a) One egg, $\frac{3}{4}$ tablespoon sugar, few grains salt, $1\frac{1}{2}$ tablespoons sherry or 1 tablespoon brandy or rum, $\frac{3}{4}$ cup cold milk. Beat egg slightly, add sugar, salt, and slowly the liquor; then add gradually milk, strain and serve.

(b) White of 1 egg, $\frac{1}{2}$ cup cold water. Stir white of egg with silver fork to set free the albumin that it may easily dissolve, as water is gradually added; strain and serve. Add few drops of lemon juice as flavoring.

Give a rule for making tea; coffee. What is the injurious element in each one?

Tea should always be made as an infusion by the use of freshly boiled water with but one infusion to each measure of tea. Tannic acid is detrimental to digestion. By applying the above rule, we reduce the amount of tannin to a minimum.

In order to obtain coffee of the finest flavor, the beans should be roasted and ground shortly before they are to be used. The water should have reached the boiling point before it is poured over the coffee. The pot should then be placed for a few minutes in a hot place, but boiling must not be allowed to continue or the aroma will be lost and the coffee contain too large a percentage of tannic acid.

How would you prepare beef broth; what cuts of meat make the best soup, and why?

The neck, lower part of the legs, and around the tail. They contain a larger proportion of juice and extractives than any other parts of the animal. To make beef broth, take the quantity of meat required, preferably round steak. For every pound of meat take 1 pint of water and $\frac{1}{2}$ teaspoonful of salt. Wipe the meat with a damp cloth, remove fat, cut in $\frac{1}{2}$ -inch cubes, put in canning jar, add cold water, let stand $\frac{1}{2}$ hour. Place jar in a kettle containing sufficient cold water to surround that in the jar. Heat the water gradually to 140° F. Keep at this temperature for two hours. Add the salt, then slowly increase the heat until it causes the tea to become a deep chocolate-brown. If desired, add pepper, and strain.

Give your methods of preparing (a) chicken broth, (b) clam broth, (c) milk toast, (d) oyster stew.

(a) Three and one-half pounds of chicken, 3 pints cold water, 2 tablespoons rice, 1 teaspoon salt, speck pepper. Thoroughly clean a chicken, remove skin and fat, separate the joints and wipe with wet cloth. Put in kettle and add the cold water, let stand $\frac{1}{2}$ hour. Heat very slowly and simmer three hours, or until meat is tender; when half cooked skim off fat and add the rice and seasonings. When the meat is tender, skim off fat and strain, taste, season properly, and serve hot.

(b) Take five clams, wash and scrub well, put in saucepan with cold water to cover. Cook until shells open, remove from pan and take out clams. Cook 15 minutes.

(c) Put a cup of rich milk in a saucepan and place it on the stove. While it is heating, toast three slices of bread to a delicate brown. Put them into a covered dish and when the milk is scalding hot season it with a saltspoon of salt and pour it over the toast. A little butter may be spread on each slice before the milk is added, but it is a more delicate dish without it.

(d) One-half cup oysters, $\frac{2}{3}$ cup milk, $\frac{3}{4}$ tablespoon water, $\frac{1}{4}$ teaspoonful salt, speck pepper, $\frac{1}{4}$ tablespoon butter. Scald the milk. Put oysters in a strainer, place over a bowl and add water. Carefully pick over oysters to remove particles of shell. Heat the liquor, which has drained from the oysters, to the boiling point, strain through the finest strainer, return to saucepan and put in the oysters and simmer, but do not boil, until they

begin to grow plump and the edges curl and separate. Strain the liquor into the scalded milk, season, add oysters, and serve immediately.

Tell all you know of coffee, its production, use and abuse.

Coffee is obtained from the coffee tree, which grows in warm countries. By the roasting procedure a volatile oil is liberated, to which the aroma in the beverage is due. When taken in excess it produces biliousness, diuresis, restlessness, dyspepsia and insomnia. The active constituent is caffeine—about 1 grain in each cup.

Name two beverages which contain tannin, and tell how it is extracted.

- (a) Tea and coffee.
- (b) By boiling.

FOOD PRESERVATION AND MISCELLANEOUS

State two methods of preserving food and illustrate each.

- (a) Drying.
- (b) Treatment with antiseptic chemical agents.

Drying—By this process a large amount of the water is extracted. Examples—peas, beans, eggs, fruits.

Antiseptic chemical agents—Salting; in this way meat and fish are preserved.

Sugar—Fruits are often preserved in concentrated syrups.

Vinegar acts as an antiseptic in preserving cucumbers, pickles, etc.

In recipes in which teaspoonfuls or tablespoonfuls of powdered ingredients are specified, are the foods to be measured in a packed-down condition, or in the natural loose condition, and is the spoon to be filled and rounded, or made level?

In all standard recipes it is understood that these dry measures relate to the ordinary spoonful without packing down of the powder. The spoon when filled is smoothed off with a table knife so that it is exactly level on top. When other measures are desired they use "a rounded spoonful" or "a spoonful packed hard."

What are the uses of condiments? Mention several.

Condiments give an agreeable flavor to food, and so excite reflexly the flow of digestive juices and stimulate peristalsis. Among the condiments are pepper, paprika, mustard and curry.

Name the two scales used in thermometry. Give freezing and boiling point of each.

The Fahrenheit and Centigrade scales.

	Freezing point	Boiling point
Fahrenheit	32	212
Centigrade	0	100

What is the general content of the National Pure Food and Drug Act?

It provides standards of purity for drugs and foods, and provides machinery for enforcement and penalties for violations. Foods and drugs must not be misbranded in any manner, and compounds containing certain designated powerful drugs must be labeled with the name and percentage of the drug specified.

What are some of the underlying causes of obesity?

Excessive food intake, especially of fats and carbohydrates, with insufficient exercise, is the most frequent cause. A low metabolism rate, as shown by the respiratory calorimeter may also be a cause.

What is urticaria?

Urticaria, or hives, is an itching skin eruption which appears suddenly and is caused by sensitization of the body to the protein of food absorbed from the alimentary tract. The eruption following in some individuals the eating of certain kinds of fish or strawberries is an example.

What is the most important seat of absorption in the digestive system?

The small intestine.

How do the energy requirements of a fever patient differ from that of the same individual in health?

In fever the changes taking place in the body are increased while the amount of food assimilated is decreased. Fever causes the metabolic rate to be increased.

(a) What are the outstanding symptoms of diabetes mellitus? (b) Outline briefly the modern method of treatment.

(a) Outstanding symptoms of diabetes mellitus are as follows:

Excessive thirst.

Frequent voiding of large quantities of urine.

Loss of weight.

(b) The modern method of treatment is to use insulin along with dietary measures. A very liberal carbohydrate diet may be given and the excess of sugar taken care of by the proper amount of insulin.

Discuss mechanical digestion. Discuss chemical digestion.

Mechanical digestion consists of the physical change that the food undergoes in chewing, movement of the stomach and peristalsis of the intestines.

The chemical digestion consists of the changes that take place in the food when acted upon by the various digestive juices. The chemical digestion is more complex and complete as each type of food, fat, carbohydrate and protein is acted upon by its respective digesting agencies. The process begins in the mouth with the saliva. The next step takes place in the stomach. The final change occurs when the intestinal juices act upon the foods to reduce them to the forms in which they are absorbed.

(a) Where does the digestion of protein principally take place? (b) Name two enzymes which assist in their digestion.

(a) Digestion of proteins takes place principally in the ileum.

(b) The two enzymes are erepsin and trypsin.

What is HCl? State its function in the body.

HCl is the symbol or abbreviation for hydrochloric acid.

It is found in the stomach and its function is to aid the process of digestion.

O. Powder
Soda Bicarb.
Cadmium carbonate

B. Powder.
Bismuth subnitrate
Soda Bicarbonate

leg. reploughed

- Soft diet - every thing
but meat.

- light diet
soup, tea, bread, but
no dinner.

Regain all food given
by nurse, too.

NURSING ETHICS AND HISTORY OF NURSING

ETHICS

What is the meaning of ethics?

Ethics is the science which treats of the moral duties of human beings to one another as established by tradition, custom, and usage.

What is meant by nursing ethics?

Nursing ethics deals with the ideals, customs and usages which have grown up to govern the nurse in her professional relations.

Write 150 words on "The Ethics of Nursing."

An essay of this nature should follow the following outline:

- (1) Definition of ethics, and of nursing ethics.
- (2) The ideals of nursing ethics—loyalty to patient, physician and training school.
- (3) The ideals of nursing—loyalty to traditions of profession and the Florence Nightingale pledge.
- (4) Personal hygiene and personal probity—their place in nursing ethics.
- (5) Duties to the profession at large and nursing associates.

Does nursing ethics imply more than an outward form of manner?

Yes; for all ethics are based upon the moral law.

Why is a good education necessary for a prospective nurse?

A prospective nurse must have a good education, because nursing is a profession, a special branch of applied medical and surgical science, and the curriculum of study prescribed in the modern training school presupposes a good preliminary education.

What other qualifications should the prospective nurse possess besides education?

Industry, neatness, punctuality, sympathy, tact, an obliging disposition and a pleasing personality, coupled with good morals,

good health, and good physique are necessary qualifications for the woman about to enter training for the nursing profession.

If you were desirous of becoming a superintendent of nurses, what especial qualifications should you have?

A superintendent of nurses should have an attractive personality, including the quality of sympathy and the power to inspire enthusiasm in her pupils; she should have executive ability in detail management; she should know how to teach, and be unusually well informed, not only on subjects within the scope of her profession, but in all allied subjects; she should be progressive and liberal in her outlook. She must have tact, balance, and a strong sense of justice. She should be unusually dependable in every way.

What opportunities have nurses for securing advanced educational training?

At least one university, Columbia, in New York, gives advanced training to nurses. Training in public health nursing may be obtained in various clinics and colleges and many institutions give opportunities for post-graduate work in dietetics, school-nursing, hospital executive work, anæsthesia, pathology and bacteriology, office nursing, infant welfare work, etc.

Name two essential points for success in private nursing, hospital nursing, public health work.

In private nursing, tact and sympathy.

In hospital nursing, efficiency and industry.

In public health work, unselfishness and enthusiasm.

Outline what you consider is the right mental attitude of a nurse at graduation towards the needs of the world and the problems that confront her.

The nurse should consider her profession more than a means of livelihood. She should have the missionary spirit toward the world and its problems.

How much does one's mental attitude towards nursing have to do in influencing the success of any worker?

If the nurse is fond of her work she will do better than one who is working from a mercenary standpoint.

(a) What are the physical attributes which a nurse should possess? (b) What should be her educational equipment?

(a) A nurse should be possessed of good health, an attractive appearance, and should not have any bodily disability or deformity. Her teeth, hair and hands should be well cared for and her apparel spotless.

(b) She should have as a minimum the standard course of training given in the high school.

(a) If called to nurse in a hospital either in special or general work, what would be your attitude to the nurse in training? (b) Would you consider yourself governed by the rules of the school?

(a) When nursing in a hospital as a graduate nurse in company with pupil-nurses, it is important not to assume any airs of superiority or to patronize the pupil nurse. It would be especially unwise to attempt to teach or correct the nurse in training, who is associated with you in work, unless especially required to do so by the superintendent of nurses.

(b) In all matters relating to the general internal discipline and conduct of the hospital you should be governed by the rules of the school.

What benefits do you derive from being allied to any nursing organization which has for its aim the elevation of standards of nursing?

Any organization which aims to elevate the standards of nursing will help the nurse both directly and indirectly—directly, through exchange of ideas and experiences with other nurses—indirectly, through the fact that anything which benefits or elevates any profession, as a whole, benefits and elevates to a proportionate degree the individual units making up the profession. Coöperative work is its own best justification.

Of what benefit is state registration of nurses to the nurses themselves, the physicians and the public?

State registration is an attempt to standardize the meaning of the word "trained nurse." When the public realizes that R.N. means a guarantee of proper training methods, the efficient and properly trained nurse will not have to compete on equal terms with the inefficient or improperly trained individual.

538 STATE BOARD QUESTIONS AND ANSWERS

State registration offers the guarantee of a standard of competency to the physician who desires to recommend or employ a nurse.

The public, when it is educated to a realization of the meaning of registration, will be protected against the impostors and incompetents who sometimes pose as trained nurses.

What does the state hope to gain by the registration of nurses?

The state will gain:

- (1) The standardization of training methods.
- (2) The resulting increased efficiency of higher standards.
- (3) The protection of the citizens against incompetency and imposture in the nursing field.

Why do you wish to obtain a certificate of registration?

(1) Because the title, Registered Nurse, means that the possessor has a definite and standardized amount of knowledge and training in the profession of nursing, and (2) because the movement for registration of nurses is in the best interests of the nursing profession as a whole.

Why is membership in nursing organizations of advantage?

Because such membership promotes efficient coöperation among nurses, helps to raise ethical and educational standards, and enlarges the outlook of the individual through her contact with other members, discussion of papers, etc., while actually increasing her enthusiasm and capacity for work.

Tell what you know about the state law on nursing.

(This question should be answered by a brief essay on the law of the particular state in which the nurse seeks registration.)

Name two national nurses' organizations.

Two national nurses' organizations are: "The National League of Nursing Education" and "The American Nurses' Association."

Mention some nursing organizations with which each graduate nurse should be affiliated.

Each graduate nurse should be a member of her city, county or state organization, and also of the American Nurses' Asso-

ciation. She should be a member of a central directory for nurses in her community.

What steps must usually be taken to obtain membership in a central directory?

A graduate nurse in good standing to obtain membership should apply to the secretary in writing, stating her references and qualifications. Prescribed forms are usually sent, with blanks to be filled out by her training school authorities, by persons who will vouch for her, and frequently, one or more members of the local registry. The requirements vary in various localities. The fees usually depend upon the facilities afforded members.

Of what value are nurses' central directories? Should they be encouraged?

Nurses' central directories should be encouraged because they provide cohesion and coöperation between the individual nurses and their patrons—the medical profession and the public.

What changes should be brought about in the training schools for nurses because of the law in regard to registration?

The training schools will have to provide generally higher and more uniform standards of education. These changes have already been effected in New York, particularly.

What should be your point of view toward nurses who are graduates but do not think it necessary for them to register?

They should be considered as working against the best interests of the profession as a whole, and every influence should be brought to bear in order to make them conform to registration law.

Would you consider your mode of dressing when exercising the calling of your profession as in any way involving ethics?

Yes; wearing the nurse's uniform at unseemly times or in unseemly places is an unethical procedure, as is also a slovenly appearance, or the wearing of much jewelry or articles not belonging to the training school uniform.

Give a rule bearing on her relation to her profession, one bearing on her relation to the physician, and one bearing on her relation to her fellow nurse.

(1) The relation of the graduate nurse to her training school should be like the relation of the grown child to the mother.

(2) The nurse should remember that the standard of the profession as a whole depends upon the standards of the individuals comprising it, and act accordingly.

(3) The nurse should consider herself in her relations with the patient as the eyes, ears and hands of the physician—but she should not try to be also his brain.

(4) The "Golden Rule" is the best rule to promote the relations that should exist between members of the nursing profession.

What rule will, if kept, insure a perfect code of ethics?
The "Golden Rule."

If you knew a nurse who habitually associated with people of bad reputation and who went to disreputable houses, and she was on a reputable registry not in possession of these facts, what would you consider your duty in the matter?

Making certain first of all of the truth of the charges, and being able to furnish conclusive evidence, it would be the duty of the nurse to lay the information with the registry.

On whom does unprofessional conduct reflect most, the nurse or her profession?

Improper or unethical conduct in matters concerned with the nurse's work reflects more unfavorably upon the ideals of the nursing profession than upon the standing of the individual nurse.

Name five qualifications of a nurse.

(See previous questions.)

How may a nurse do much harm toward the profession of nursing?

Unethical conduct of any sort will do much harm to the profession of nursing.

What is the Florence Nightingale pledge?

The Florence Nightingale pledge is a modification of the ancient Hippocratic oath, formerly subscribed to by physicians.

It takes its name from Florence Nightingale, the founder of modern nursing, who enjoined it upon her pupils. The pledge promises loyalty to the physician; justice and generosity to fellow nurses; personal probity and honor in the practice of the profession; the missionary spirit in work; aloofness from temptation, and secrecy in matters coming under observation in the homes of patients.

Name one qualification in a nurse which would give some insight into her ethical standards.

Truthfulness is a necessary qualification for a nurse, the absence of which would indicate a lowered ethical standard.

Has a nurse any moral right to use the name of her training school superintendent for references if her conduct can be justly criticised by both the laity and the profession?

The nurse who places herself in this position—through dishonorable or unmoral conduct—forfeits all claim to her training school and its officers.

To presume on their ignorance of the facts in order to obtain an endorsement, which would be refused if the facts were known, is in itself a grave breach of ethics.

Name five different branches of work which may be followed by nurses.

Institutional nursing.

Private day nursing.

Public health nursing.

School nursing.

Office nursing.

What course may generally guide nurses in making decisions involving the ethics of other nurses, or of physicians or of the public?

The general rule to do as you would wish to be done by. The practice of placing your duty to your patient and physician first, to your training school next, and to your personal interests last, will assure you of an ethical position in almost any situation and give you the approval of your own conscience.

What should a senior nurse's attitude be toward a junior nurse?

The senior should not assume an air of superiority toward the junior nurse, nor presume upon her lack of experience in order to impose on her. She should, whenever possible, give the junior tactful assistance, and by personal example and precept endeavor to inculcate a spirit of loyalty to the school, its ideals and its rules.

What impresses you as being one of the most important questions before the nurses of to-day?

One of the most important questions before the nurses of to-day is the problem of uniform state regulation of nursing standards, and the education of the public to the significance of nurses' registration.

State the moral significance of "loyalty" and "honor" on the part of the nurse in her work.

Loyalty is best expressed in a strict obedience to the obligations of your superior officer, whether it be in the training school under the superintendent, or in private nursing, under the physician's orders. In the wider sense it includes your feelings of gratitude or friendship which cling around the institution and its working staff and your associates in work, and which impel you to defend them when under criticism.

Honor assumes a definite and vivid ideal of personal conduct and a strict adherence to the principles which will preserve this ideal intact. Borrowing money from or using without permission articles owned by other nurses, soliciting or accepting gifts from patients in the hospital as a reward for special favors or attentions, falsifying reports, verbal or written, especially to cover up omissions or mistakes—these are a few examples of actions that would indicate a deficient sense of honor in the nurse.

Describe the duties of a nurse in private work as concerns (a) personal appearance and habits, (b) obligations to patient, physician and family, (c) conduct in the sick room.

(a) The nurse should have no objectionable habits, such as snuffing, clearing the throat, an inability to sit quietly, etc. She should be immaculate in personal appearance, and should not

have any bad odors of the breath, such as come from decayed teeth, indigestion, or catarrh, or the odor of perspiration. She should perform all the acts of making her toilet in a retired place, where the patient will not see her.

(b) The nurse should make every effort to make a favorable impression on the patient from the beginning, should endeavor, tactfully, to learn her likes and dislikes and study her individuality and whims. She should not talk too much or stir about or "rustle" too much, talk about her own affairs, and especially, talk about gruesome or unpleasant subjects. She should not discuss the physician's actions or encourage criticisms of other physicians or nurses by the patient. She should carry out the orders of the physician with conscientious care, carefully observe the patient and keep a complete record of the clinical course. She should not question the physician's motives in pursuing certain lines of treatment, nor endeavor to explain them to the patient. She should make as little trouble as possible for the members of the family or servants, and, as far as possible, be independent of their aid. She should take her time off at a period of the day convenient to the family.

(c) In the sick room she should assume a quiet and unobtrusive manner and be as cheerful as possible, taking care, no matter how exacting the case, to keep her personal appearance as fresh as possible. She should endeavor to allow the patient and physician to be alone for a short time at each visit of the latter; and should make opportunity to privately give the physician any information unsuitable for the patient to hear.

Mention three common complaints which the public make about graduate nurses.

(1) That they require too much waiting on and cause trouble thereby with household servants.

(2) That they take excessive time off even when the patient is very ill.

(3) That they are unsympathetic.

Describe a nurse's emergency bag equipment.

Some of the ordinary requisites for a nurse's bag are: 3 or 4 dresses, 12 aprons, many collars and cuffs, 2 caps, 2 washable petticoats, underclothing, night-dresses, wrapper, slippers, a toilet roll containing brush and comb, tooth powder, tooth brush,

manicure scissors, nail cleaner, nail brush, hair pins, pins, wash cloth, bath sponge, hand mirror, clothes brush, shoe paste, clothes bag, and a case of nursing utensils containing a hypodermic syringe in good working order, with sharp needles, an accurate clinical thermometer, dressing forceps, surgical scissors, rubber gloves, a glass catheter, a rectal tube, medicine droppers and a graduate.

What should be the attitude of the nurse toward hospitals?

The nurse should be loyal to the hospital from which she has graduated. She should not criticise it, nor point out its defects to non-graduates, defects which, probably, are even better known to the management than to the nurse. She should not, however, go to the length of speaking disparagingly of other institutions, especially to patients, since any unfair criticisms of the training place of the nurse cannot help but react on the nurse herself.

In taking a case in a hospital from which she herself has not graduated, the nurse should learn from the superintendent of nurses the regulations of the institution, and adhere strictly to its routine, being careful to refrain from criticisms, or even comparisons, of the methods used there with those employed in her own or other institutions.

Give reasons why nurses should not wear their uniforms on the street or in public places.

A uniform is in no way suitable for street wear. It belongs peculiarly to the sick room or the hospital, and the nurse who wears it on the street invites unflattering attention. The dust of the street is germ-laden, and the soiling of the nurse's uniform, even though it be ordinarily imperceptible, may be a positive menace to a surgical or obstetrical patient.

Would fear of contagion be a valid excuse, under any circumstances whatever, for a nurse's refusal to care for a case of smallpox? Give reasons for your reply.

There is little need of fear, since she can be readily immunized against the disease. If she is doing private duty nursing and has registered as not taking contagious diseases, particularly does surgical nursing, she has no obligation to take smallpox

because she is living in a family with susceptible individuals or cases.

If you were called on a case by the family and you knew the doctor did not care for you, what would you do?

It would be unwise to accept a case under these circumstances, and embarrassing to state the real reason for refusing it. If the call comes through a directory the secretary in charge may be made acquainted with the circumstances and trusted to arrange the matter diplomatically. If called directly by the family, the nurse should simply tell them to consult the preferences of the doctor in charge before making a positive engagement.

If you were nursing in a family, and, from unmistakable conduct on the part of the patient and family, felt convinced that either your personality or professional services were not acceptable, what would you do?

Consult the physician in charge of the patient, tell him of your convictions in the matter, which, if well founded, he will be able to confirm, and ask him to relieve you from duty by choosing another nurse. Remain on the case until the new nurse arrives and give her every courtesy.

If you were retired from a case at the suggestion of the family and were succeeded by another nurse, what would be your ideas of the courtesies of the case?

Get in touch immediately with the physician, if the family has not consulted him, concerning the change, and expressing your willingness to retire, ask him to consult with the family in the matter. Meanwhile remain on duty until your successor has arrived.

Turn over to her all the records and notes of the case, explain any peculiarities of the routine and any verbal orders, and do not appear to be vexed or distrustful of her ability to succeed where you have failed.

What courtesy should be shown in your conversation with your patient and his family regarding the reputation or ability of the attending physician?

Under no circumstances criticise the attending physician to the family. If your opinion of his reputation is asked for, let

it be favorable. It is a safe rule, that, if a nurse cannot do this, she must give up the case—sever her professional connections with it—before she is at liberty to voice her criticisms.

What attitude should a nurse take in case of dissatisfaction of the family toward the physician?

The nurse should be loyal to the physician, and even though she does not understand why he has used certain methods of treatment, she should maintain that he is competent and has good reason for anything he may do. She should not attempt to explain or give reasons for his actions. If his technic seems not up to the usual standards, it is all the more necessary for the nurse to do her part in good service to atone for this deficiency. If the family discharges the physician, the nurse should offer to leave the case with him, remaining only until a substitute is found, unless the discharged physician insists upon her remaining, in which case she should tell the incoming physician of her willingness to give way to a nurse of the latter's choice.

If a family discharges the attending physician on a case and employs another, what would be your duty?

As stated in the foregoing question and answer, the nurse should leave the case, unless urged to remain by the outgoing physician. She should immediately get in touch with the incoming physician and state her willingness to leave, to give way to a nurse chosen by him. She should wait until this nurse arrives, treat her with every courtesy and give her all records, etc. If the incoming physician wishes her to remain and she has been urged to do so by the outgoing physician, there is no reason why she should not stay.

If you were called to a case by the family, and on arriving found that the attending physician was one for whom you had no personal or professional respect, what would you do?

Give up the case immediately, simply telling the family that unforeseen circumstances have arisen which will prevent you from taking it. If it is an emergency, stay until your substitute arrives.

If you felt that a doctor was not treating the patient by the best methods, would you ask to leave the case, or persuade the patient to change doctors?

It is the duty of the nurse to assume that the doctor is competent, conscientious, and correct, until she is forced to a contrary decision. If doubts arise she should consult some experienced person, such as the superintendent of her training school. If she is then further convinced, she should notify the surgeon of her intention of giving up the case, notify the family, telling them of her doubts and carefully refraining from suggesting any substitute. Under no circumstances is it permissible to suggest a change of physician while nursing a patient.

What do you mean by loyalty to the physician?

Loyalty demands that you say or do nothing to cast doubt in the mind of the patient or his family as to the character or ability of the attending physician.

Is a nurse permitted to speak of the social evil?

This is not a pleasant subject and it should not be introduced by the nurse. But if her views are desired, especially by the mothers of young boys, she should not hesitate to enumerate the dangers to health and life caused by the venereal infections.

Would you increase your salary if caring for more than one patient in a house?

This will depend on circumstances. If both patients are quite ill an extra charge should be made, subject to local registry rules. If, however, the illnesses are slight, or one patient is convalescent, or requires little attention, it is better not to make an extra charge, to people of ordinary means. Local registry rules prevail.

Provided a nurse has little time for personal reading, what should constitute that reading?

One of the magazines published by the national associations, or other literature pertaining to her work.

If called on a case by a doctor who you knew had performed an abortion on a patient, would you take the case?

No; for you could not afford to associate in private nursing with a criminal or a malefactor of this type.

Provided you were on night duty in a hospital either as a student or graduate nurse, and in the middle of the night discovered that an order for a drug to be given a patient was unusually large in size of dose, so that you feared harmful results, what would you do?

Call the night supervisor, recording the call on your night report. If the supervisor is not available, call the house physician on the ward and explain the matter to him, no matter what the hour may be. It is usual to emphasize unusually large doses by underscoring them when they are written.

What obligation do you consider you owe to the school which made it possible for you to become a graduate nurse?

The obligation of absolute loyalty. This means to overlook slight shortcomings and to criticise great ones as little as possible, and then only to those in a position to remedy them, and never to outsiders.

What care should you give your patient's belongings?

You should give them the same care that you would give your own most cherished possessions. You should note any peculiarities affected by the patient in her care of personal things and endeavor to imitate and emulate her plan; no matter how unusual or foolish the arrangement may seem to you.

What should be your attitude toward domestics in the families where you may nurse?

Assume a polite, dignified manner with them, but do not become familiar with them, or listen to backstairs gossip. Make as little work for them as possible, and especially be careful not to make a mess in the kitchen. Do not place an unnecessary amount of work on the laundress, and rinse out such stains yourself as would be repugnant to the lay person.

If your patient was the mother of a family where would your duties end?

The patient should not be neglected in order to give attention to the children in the family, but such help should be rendered them as is consistent with good service to the mother, provided that no suitable person is at hand to care for them.

To manifest a helpful interest in the children, when conditions allow it, will not only help you to hold the mother's con-

fidence, but will also have a good mental effect on the patient, who is certain, under ordinary conditions, to worry about her children's care.

How long would you feel justified in leaving a very sick person in incompetent hands while you secured much-needed rest?

This is a difficult matter to decide, because the conditions vary with the degree and nature of the illness, and the degree of incompetence of the individual who will relieve you. A delirious patient who is able to get out of bed left in charge of a slight and wholly incompetent servant of limited intelligence would represent one extreme; a person in a comatose condition, unable to swallow and requiring no nursing measures, left in charge of a person not competent as a nurse, but having fair judgment generally, would be quite a different matter. In the former case the patient had better not be left in incompetent hands at all. When fatigue makes it impossible for the nurse longer to do good work, she should have a substitute secured and leave the case, and her successor should do likewise, if necessary. If the conditions occur where this procedure cannot be carried out, as in a country district, then the shortest possible time should be taken for rest and the most competent and sensible lay person available should be engaged to relieve. If there is no acute danger to the patient in leaving her for four hours, as in the example cited of the comatose patient, then this amount of rest should be taken by the nurse.

If you were nursing a very unruly child, whose behavior prevented you from carrying out the physician's orders, and the mother would not enforce the necessary discipline, what would you do?

State the case to the attending physician in the presence of the mother, and also state your intention of retiring from the case. The physician will either insist upon your remaining with the mother's help, or will demand that your successor receive proper support from the mother.

If a patient took a dislike to you for some unknown reason what would you do?

State the fact, and your reasons for it, to the physician and the family, ask them to provide a successor to you, and retire

from the case when the latter arrives. It is useless as well as humiliating to try to remain in a position where your services are not appreciated or your personality is not agreeable.

Do you consider that you are justified in charging carriage and ticket fare in full if you have taken a street car and are travelling on a mileage?

You are justified in charging as expenses only what the actual cost is to you. To do otherwise would be to obtain money under false pretenses. It is a good rule to spend money under these circumstances with the same regard for economy as if it were to come out of your own purse.

If there was no one about the house to help with small children, what attitude would you assume in the home?

In so far as possible, the nurse should take the place of the mother, provided she does not have to neglect the patient, to whom her first duty belongs.

(See previous questions.)

Do you permit small children to sleep with your patient?

No; no one, especially small children, should sleep with a sick person. Make some temporary provision for them elsewhere.

(a) Is it wise to attempt to shield a person from worry by deceit? (b) Give a reason for your answer.

(a) Yes; a patient may be shielded from worry by deceiving him if, in the judgment of those attending him, his condition demands it.

(b) The reason is best summarized in Dr. Richard Cabot's statement: "When you are thinking of telling a lie," he says, "ask yourself whether it is simply and solely for the patient's benefit that you are going to tell it. If you are sure that you are acting for his good, and not for your own profit, you can go ahead with a clear conscience."

Of course this applies only to statements which will not injure any other individual—as answers to inquiries about diagnosis, progress of the disease, line of treatment, or unwelcome or shocking news of any kind.

What is the duty of a nurse in regard to her patient's personal and family affairs?

The nurse must not gossip about her patient's personal or family affairs. Any information obtained through her entrance into the family as a nurse should be looked upon as a privileged communication, and her lips should be sealed concerning it.

Is it ethical to accept less than the stipulated fee in families whose means you know are limited?

How would you arrange the matter to avoid criticism?

Tell the family that you will make a definite allowance from the total bill when the case is ended and accept such amounts as may be given weekly as payments "on account." When leaving, make out your bill something like this:

Mr. John Smith to Miss Mary Doe, Dr.

June 1 to June 22—3 weeks' nursing, @ \$25	\$75.00
June 8, by cash	\$15.00
June 15, by cash	15.00
June 22, by cash	15.00
June 22, by allowance	30.00
	————— \$75.00

Charge the regular rate on the bill, credit such amounts as you arrange to be paid, and credit whatever reduction you make as an allowance. In the example quoted the nurse is actually working for \$15 a week. It is highly commendable to do this if the family actually is poor and your services are necessary.

If you had made a professional engagement for a certain date and later had an opportunity to take a better or more attractive one, what would be your duty?

The nurse is obliged to stand by her first agreement at whatever cost. If, however, the nurse has been retained by the physician and not the family, and the physician suggests the change, there will be no breach of contract, providing the physician himself furnishes a substitute.

(a) Why is it necessary to have rules and regulations governing hospitals and schools of nursing? (b) What should be a nurse's attitude toward such rules while in training and after leaving the school?

(a) It is necessary to have rules and regulations governing hospitals and schools of nursing, made usually by bodies outside

of the hospital executives and staff, in order to establish adequate and uniform minimum standards to which all hospitals and schools of nursing shall subscribe, and to enforce these standards through the withholding of recognition to such institutions as fall below these standards. These regulations are made primarily to protect patients through the raising and maintenance of standards of medicine and surgical care, as well as the standards of nursing education.

(b) The nurse should uphold and obey such regulations both while a student and after graduation, since they are promulgated for her individual benefit as well as for the benefit of her profession as a whole. To this end every graduate nurse should become a member of the local and national nursing organizations.

(a) How may a nurse's voice affect the comfort of a patient? (b) What qualities of voice should a nurse cultivate? (c) What qualities avoid?

(a) A harsh, loud or otherwise disagreeable voice may irritate a patient as to produce a mental state which may tend to retard the patient's recovery. This is especially true of loud conversation carried outside of the sick room, in corridors and adjacent rooms.

(b) The nurse should cultivate a soft and melodious speaking tone.

(c) The nurse should avoid high-pitched, loud, or nasal tones, and rapidity in speaking.

What is meant by a sense of honor?

The application of the golden rule to the relation existing between the nurse, her patient and the attending physician.

(a) What effect will continued neglect of small things, which might add to a patient's comfort, have on a nurse's character and the general quality of the service she renders?

(a) A nurse who neglects small things which might add to a patient's comfort will eventually lead her to slipshod methods in more important things, and cause deterioration of her standards and of her character. Such a nurse will not be trusted by the patient in large things the value of which the patient cannot judge, when service in small matters of comfort are stinted. She will be justly called a poor nurse.

Mention several ways in which a nurse may continue her education after graduation.

A nurse may continue her education after graduation by subscribing to and reading nurses' periodicals; by attending meetings of nursing organizations and hearing, writing and discussing technical papers in such meetings of nursing and hospital associations; by taking post-graduate courses in nursing subjects.

Do you consider a number of supplies and appliances the prime requisite for successful nursing?

No; the prime requisites for successful nursing are a combination of natural gifts, training and experience. Appliances can be improvised, given these requisites.

If you should follow a nurse upon a case and your patient and family persisted in telling you of your predecessor's faults, what would your attitude be?

Let it be known, in as tactful a manner as possible, that criticism of your predecessor does not please you, and defend, if at all possible, her reputation. If you cannot do this, reserve your judgment of the absent one and make no criticisms to the family.

What does nursing ethics teach in regard to discussing the ability of a physician who is not the attending physician?

It is unethical to discuss the relation and merits of physicians with patients under your care. If asked about the reputation of a physician other than the attending physician, say that you are not competent to judge, and refer your questioners to the attending physician for an opinion.

If you were associated on a private duty case, either for day or night duty, with a nurse who in important details of treatment, medicine, etc., falsified her record, and you were convinced from proper evidence that she was negligent, and the nurse was a graduate of your training school and a friend, what would be your duty?

The nurse's first duty is to the patient whom she serves and the physician whom she helps. Her personal feelings have no right when opposed to her duty. She should speak to the negligent nurse, point out her faults and warn her that if she does not do better she will be reported to the physician. If she is gravely

in the wrong it would be well to insist upon her retirement from the case under penalty of exposure. If she fails to do better, or to retire, tell the physician the facts immediately.

What opportunities have nurses for acquiring advanced educational training?

Courses leading to a degree are given by Teachers College, Columbia University. State Universities and other institutions arrange shorter courses in special branches such as public health nursing, nutrition, and similar subjects.

What is the Jones modification of the Hippocratic oath, which originated in the New York City Hospital?

This pledge originated by Mrs. Cadwalader Jones, of the Board of Managers of the City Hospital, New York, is similar to the "Florence Nightingale Pledge." It promises loyalty to the physician; justice and generosity and aid to sister nurses; personal purity in private and professional life; the utmost effort for the good of the sick in private nursing and aloofness from temptation; secrecy as to personal information gained by contact with patients or their families in private nursing or in any other professional capacity.

Is it ethical for a nurse paid for 12-hour duty to do additional hourly nursing for other patients when she is off duty?

No. The reason for limiting the nurse's period of duty to twelve hours is that she may have sufficient rest during the remaining twelve hours after her continuous work in the sick room.

If a close member of the family of a very ill patient insisted upon staying in the room for a long time, until even the patient himself worried as to means of curtailing the length of such visits, yet feared to offend his visitor, what would you do?

Get in touch with the physician and after explaining the matter request him to personally forbid visits from anyone for longer than a certain specified minimum period, and also ask him to particularly speak to the offending individual. If this is not sufficient, when the visitor outstays his time, urge some real or imagined personal office to be done for the patient which will necessitate the visitor's leaving the room.

What is the difference between the duties of the hospital social worker and the general visiting nurse?

The hospital social worker by compiling a case history, studies the social and economic environment of the family, especially in its probable relation to the disease of the member that has come to the hospital.

The general visiting nurse, as distinguished from the public health nurse, or specialized visiting nurse, endeavors to carry the facilities of the hospital, as well as the educative influence of the hospital into the home, to the end that disease may be prevented or lessened by home-nursing facilities.

Is it ethical for a nurse to be associated with a physician or dentist who advertises in newspapers?

Usually such individuals are frauds, and are imposing upon the public. Since it is unethical to participate even indirectly in any fraudulent enterprise, such employment would not be ethical for a reputable nurse.

Name some activities of the graduate nurse which are not remunerative but highly necessary to the welfare of her profession.

Active membership in the local and national nurses' associations; coöperation and assistance in teaching organizations, examining boards and other organizations for raising the standards of nursing education.

Should a nurse upon receiving her diploma and passing the State Board Examination affiliate herself with nursing organizations?

Yes, immediately. She should join the local Nurses' Registry and affiliate herself with the American Nurses' Association. She should allow no neglect in the payment of her dues and should read the literature of her profession in current nursing journals and books.

Tell why nursing is a profession and not a trade.

A profession is an occupation which requires a learned education for its practice, as distinguished from an occupation in which craftsmanship or salesmanship is employed. Under this definition nursing is a profession. This fact is recognized in several institutions of learning, notably Teachers College, Columbia University,

556 STATE BOARD QUESTIONS AND ANSWERS

New York, where degrees are given to nurses who comply with preliminary educational requirements and take required courses.

Explain the term "tact." How can it be cultivated?

Tact is the peculiar ability to deal with others without giving offense.

It may be cultivated by following the example of someone whom you admire for their ability to "get along" with people; by learning to say and do the right thing at the right time; by being kind and courteous at all times.

State five important things which a nurse should consider before making a choice of any branch of nursing.

1. Fitness for the particular work.
2. Whether or not it will be agreeable,
3. How much good she can do for the community and herself.
4. Chances for promotion or advancement.
5. Financial returns.

What do you understand by adaptability and how is it cultivated? Why is it important in a nurse's success?

Adaptability is the power to change one's self to fit the environment. It is best cultivated by making the best of circumstances and taking in good humor things over which we have no control. Adaptability not only applies to the personality of a nurse but also to her training and skill.

It is an important trait for a nurse to possess as she is constantly called upon to adjust herself to new people, new places and new situations.

Why should every nurse subscribe to the American Journal of Nursing?

To lend her material support to a publication that seeks to improve the aims and standards of her profession.

To acquaint herself with what is going on in the profession at large.

To learn modern and improved methods of nursing.

Name three important qualities for a nurse to possess who desires to be invested with large responsibilities.

1. Foresight.
2. Dependability.
3. Resourcefulness.

Of what special benefit to nurses is a knowledge of current events?

Such knowledge will (a) stamp the nurse as an individual of intelligence and discrimination, and (b) will be of practical use in maintaining the mental tone of convalescent patients, and those not acutely ill.

HISTORY

Name a graduate nurse who has won fame as a writer of fiction and descriptive articles.

Mrs. Mary Roberts Rinehart.

Of what nursing organization was Miss Jane Delano chairman during the last ten years of her life?

The Division of Nursing of the American National Red Cross.

Who were the following?

(a) St. Vincent de Paul, (b) Paula, (c) Phoebe, (d) Elizabeth Fry, (e) Caroline Fleidner, (f) Florence Nightingale, (g) Edith Cavell, (h) Jane Delano, (i) Sister Helen, (j) Linda Richards?

(a) St. Vincent de Paul, a French priest (1576-1660), was the founder of organized charity and instituted the Sisters of Charity.

(b) Paula was a wealthy early Christian matron who assisted St. Jerome, and founded inns and hospitals.

(c) Phoebe was a friend and contemporary of St. Paul, who nursed the sick and poor.

(d) Elizabeth Fry was an English Quakeress, of the late 18th Century, who was a pioneer in prison reform and helped the Fleidners in their work.

(e) Caroline Fleidner was the second wife of Pastor Fleidner, who with his first wife opened a hospital and school for the nursing Deaconesses at Kaiserworth on the Rhine, in 1833. Caroline Fleidner valiantly carried on the work begun by her predecessor.

(f) Florence Nightingale (1820-1910) was the real founder of modern trained nursing. After studying nursing for some years she found her great opportunity in the Crimean War, when she went to the front with a corps of 40 nurses, Catholic sisters and Deaconesses. She was instrumental in founding the first English nurses' training school in St. Thomas' Hospital in London (1860).

558 STATE BOARD QUESTIONS AND ANSWERS

(g) Edith Cavell was an English nurse, who was put to death in Belgium during the German occupation by German military authorities because of her activities in aiding Allied prisoners to escape.

(h) Jane Delano, head of the U. S. Army nursing corps (1901-1904), and then head of the nursing division of the American Red Cross, was responsible for the effective nursing corps and nursing education program of the American Red Cross in the World War.

(i) Sister Helen was a member of the Protestant Episcopal sisterhood of All Saints Sisters, who was the first Superintendent of the Bellevue Hospital nurses' training school.

(j) Linda Richards, the "First Trained Nurse in America," graduated in 1873 from a training school organized by Dr. Susan Dimock in the New England Hospital for Women and Children.

From what great movements of the past does nursing inherit (a) its tradition of consecration to service; (b) of courtesy, dignity and poise; (c) of rigid military discipline; (d) of intelligent service?

(a) Nursing takes its traditions of consecration to service from the spirit of service to others exemplified in the teachings and practice of Christianity throughout the ages which is only another name for the "nursing spirit"; (b) It derives its traditions of courtesy, dignity and poise from the chivalric nursing orders of the Crusades, as well as from the modification of the Hippocratic oath which was adopted by Florence Nightingale; (c) It derives its traditions of rigid military discipline from the fact that nearly all of the earlier organized nursing, and the very development of modern trained nursing, began in military camps and hospitals; (d) It derives its traditions of intelligent service from the application of modern economic and sociological knowledge, as well as the development and application of modern scientific and especially medical knowledge, to the problems of illness and its cure and prevention.

What important contributions did France, England, Germany and the United States make toward the development of nursing as a profession?

France:—Visiting and hospital nursing revived in Paris by Saint Vincent de Paul, who organized the Sisters of Charity (17th Century).

Germany:—The Fleidners at Kaiserworth revived the Protestant Deaconesses order and established a training school and hospital (18th Century).

England:—Florence Nightingale served in the Crimean War, with an organized corps of nurses (1854-56). Established a modern training school at St. Thomas' Hospital, London, in 1860.

United States:—New England Hospital for Women and Children started a training course for nurses in 1860. Bellevue Hospital Training School established 1873. An advanced course in Nursing established by Teachers College, Columbia University, 1891.

Give a brief history of the Red Cross.

The International Committee of the Red Cross was founded by Henri Durant, a Swiss humanitarian. His plan for societies for relief in war, organized nationally and affiliated internationally, with permanent headquarters in Geneva, was adopted in 1864 by the representatives of several nations there present. Red Cross societies were thereafter built up with zeal and thoroughness in many countries.

Miss Clara Barton founded the society which was later to become the American Red Cross. Her society was called the American National Committee or Society of the Red Cross for the Relief of Suffering by War, Pestilence, Famine, Fire, Flood and other calamities. The United States Senate finally ratified the treaty in 1882. At the Geneva Conference in 1882 Miss Barton had presented the articles relating to pestilence, famine and natural calamity. This extension of Red Cross activities was known as the "American Amendment."

Where is the national headquarters of the American Red Cross?

In Washington, D. C.

(a) Give the name of the official magazine of the American Nurses' Association. (b) Who was the first editor?

- (a) The American Journal of Nursing.
- (b) Miss Sophia Palmer.

Discuss three of the earliest schools of nursing in the United States.

The New York Hospital 1771 made the first attempt to instruct its nurse attendants. Dr. Valentine Seaman gave lectures on anatomy, physiology and the care of children.

In 1839 the Friends in Philadelphia organized a teaching service to nurses. Dr. Joseph Warrington was in charge of the obstetrical work and instruction. In 1855 a leaflet was put out by this society, appealing to young women to enter the nurse's calling.

The Women's Hospital in Philadelphia opened a school for nurses in 1861. The medical staff were women. The teaching of nurses was for a long time elementary, but it became ultimately a well-established institution.

Mention important facts concerning the following characters: (a) Amy Hughes; (b) Hippocrates; (c) Clara Barton.

(a) Amy Hughes: First public school nurse, started her career in England.

(b) Hippocrates: a Greek physician of about 500 B. C. who by his scientific writings and code of ethics became the founder of the modern profession of medicine.

(c) Clara Barton was a famous nurse who did much for the relief of suffering in the Civil War. She also founded the American Society of the Red Cross.

Discuss the importance of the early school at Kaiserworth, Germany.

Modern training schools may trace very definite lines back to Kaiserworth in discipline and general arrangement. This school brought about a great reformation in hospital service and institutional work generally. They treated patients with kindness and humanity. This coupled with their systematic training course set them up as examples for later schools to copy.

Mention nurses who have rendered creditable service in foreign countries.

Florence Nightingale

Edith Cavell

Florence Lees

Friederika Fleidner

Give the outstanding names of at least one nurse in connection with the following wars: The Crimean, the Civil War, the Spanish-American War and the World War.

The Crimean:	Florence Nightingale
The Civil:	Clara Barton
The Spanish-American:	Lucy Quintard
The World War:	Edith Cavell

Give a brief sketch of the history of the American Nurses' Association. How may a nurse become a member?

The conscious and orderly development of the nursing profession began with the National Union of nurses and their contact with one another in yearly conferences. The earliest association was called the Associated Alumnae of Training Schools for Nurses, and was formed of alumnae societies, both of Canada and the United States in 1898. This society grew larger in size and absorbed county, and then state societies, finally developing into the National Society, which in 1912 changed its name to the American Nurses' Association.

Any nurse automatically becomes a member of the American Nurses' Association when she becomes a member of her own alumni association.

Why do we remember (a) Lillian D. Wald; (b) Adelaide M. Nutting; (c) Sophia Palmer; (d) Isabel Hampton Robb; (e) Julia C. Stimson; (f) Annie V. Goodrich?

(a) Lillian D. Wald brought Public Health Nursing to the attention of the public and won public support by her notable work.

(b) Miss Nutting was Superintendent of Nurses at Johns Hopkins University Hospital 1894-1907. She emphasized the educational character of the nursing training and collaborated in writing with Miss Dock a splendid History of Nursing.

(c) Sophia Palmer was one of the first two women to replace men as superintendents of general hospitals.

(d) Isabel Hampton ranks as the foremost leader in this country in the advancement of nursing education and standardization of institutions.

(e) Julia C. Stimson was head of the Army Nurse Corps and Dean of the Army School of Nursing during the late war.

(f) Anna V. Goodrich was sent by the United States Govern-

ment to inspect the nursing service in this country and abroad during the World War.

(a) Who was the founder of modern nursing? (b) Give a brief history of her life.

(a) Miss Florence Nightingale.

(b) Miss Nightingale was born in England in 1820 of a very wealthy and socially prominent English family. She received a thorough education in addition to the culture she developed in the select circle in which she lived. Much against the wishes of her family, she became interested in nursing. She visited many hospitals on the Continent and at home. She studied nursing in Paris for a short time with the Sisters of Charity and also at the famous nursing school at Kaiserswerth conducted by the Fleidners. Following her training she became head of a nursing home in London where she showed her unusual executive powers.

In 1854 the Crimean War began. It was in this war that Miss Nightingale received her great opportunity and became the most outstanding figure of the nursing profession. By her zeal, ability and courage she established hospitals and nursing service for the soldiers. In addition she started the first welfare work among the troops.

Following the war she received a gift of money from the British Government with which she founded the nursing school at St. Thomas' Hospital in London.

During the remainder of her life Miss Nightingale devoted her time to the betterment of the nursing profession; the organizations of schools, and the problems that confronted her profession. She was most active in several branches of philanthropic work until her death in 1910 at the age of 90 years.

CHEMISTRY AND PHYSICS

Why is a knowledge of chemistry and physics essential to the nursing profession?

Nurses should have a knowledge of chemistry and physics because (1) physiology is an attempt to explain the normal body function through chemical and physical laws, and (2) because a knowledge of the chemical and physical properties of many remedies is almost essential to the proper understanding of their actions and uses.

Define chemistry and name the two divisions.

Chemistry is the science that investigates the composition of matter. The two divisions are: inorganic and organic.

Define atom, molecule, atomic symbol.

An atom is the smallest particle of matter that can exist in a state of combination.

A molecule is the smallest part of a substance that can exist and maintain its own identity.

The atomic symbol is a certain letter or a combination of letters selected as a symbol for an element—as N for nitrogen, Co for cobalt, etc.

How many elements are known and name four which are gases?

There are 82 elements known at present. Four gases are: oxygen, nitrogen, chlorine and hydrogen.

What do we mean by valency; a monovalent; bivalent; trivalent or tetravalent element?

The number of hydrogen atoms with which an element combines or which it replaces is its valency.

Atoms which can hold one hydrogen atom in combination (or its equivalent of some other element) or can replace one hydrogen atom in compounds are known as "univalent" (monovalent). If they can do the same with two hydrogen atoms they are "bivalent." For three, trivalent; for four, tetravalent, etc.

Why cannot tap water be used for making silver nitrate solutions?

Tap water cannot be used for making silver nitrate solutions because even traces of organic or inorganic impurities, especially chlorine, may decompose silver nitrate in solution.

What is a hydrocarbon? Name four.

A hydrocarbon is a compound composed of hydrogen and carbon only. Some hydrocarbons are methane (CH_4); ethane (C_2H_6); propane (C_3H_8); and butane (C_4H_{10}).

What elements are found in carbohydrates? In what proportion is the hydrogen and oxygen?

Carbon, hydrogen, and oxygen are the elements found in carbohydrates. The proportion is H_2 to O , 2 to 1.

A. What is an indicator?

B. What is litmus and for what is it used?

Indicator is the name given to a solution or an impregnated strip of paper used to test the acidity or alkalinity of another solution.

Litmus is a vegetable color, either in solution or impregnated strip of paper, which is used to test the alkalinity or acidity of another solution. Blue litmus turns pink in acid, and pink litmus turns blue in alkaline solution.

Name the following: Hg_2Cl_2 ; HgCl_2 ; NaHCO_3 ; BiONO_3 ; CHCl_3 ; CHI_3 ; $\text{C}_3\text{H}_5(\text{OH})_3$; $\text{C}_2\text{H}_5\text{OH}$.

Hg_2Cl_2	Mercurous chloride.
HgCl_2	Mercuric chloride.
NaHCO_3	Sodium bicarbonate.
BiONO_3	Bismuth subnitrate.
CHCl_3	Chloroform.
CHI_3	Iodoform.
$\text{C}_3\text{H}_5(\text{OH})_3$	Glycerol.
$\text{C}_2\text{H}_5\text{OH}$	Ethyl alcohol.

Name three kinds of energy. What is the law of conservation of energy?

Three kinds of energy are heat, chemical and electrical energy. In the conversion of one kind of energy to another no energy is ever lost or destroyed.

Define (a) chemical change, (b) physical change.

(a) Chemical change is a change in composition.

(b) A physical change is a change in the state of matter.

Define Avogadro's law.

Avogadro's law is a law of physics to the effect that if the temperature and external pressure remain the same, equal volumes of all gases contain the same number of molecules.

What is the organic acid group; aldehyde group?

Organic acids are compounds in which hydrocarbon radicals

are united to carboxyl — $\begin{array}{c} \text{O} \\ \parallel \\ \text{C} \\ \diagdown \\ \text{O} - \text{H} \end{array}$ which is the characteristic

grouping of all organic acids.

Aldehydes are compounds formed by the removal of two atoms of hydrogen from the corresponding alcohols, and stand intermediate between the alcohols and the acids.

Tell as far as you can the full significance of the symbol, the chemical formula, the chemical equation.

Give an example of each.

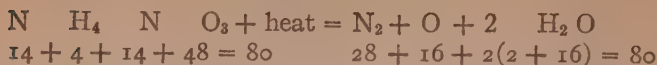
Certain letters or combination of letters have been devised to stand as symbols for the name of chemical elements, in order to facilitate writing—a sort of chemical shorthand. Symbols are taken directly from the names of the elements. They are placed side by side when it is desired to indicate chemical union.

Examples. Fe for iron; NaCl for sodium chloride.

Chemical formulas were introduced by Berzelius into chemistry. An example is H_2O , the formula for water; O stands for one atom of oxygen in the molecule; H_2 for 2 atoms of hydrogen; H stands for hydrogen in general, but in formulas it stands for one atom of hydrogen; and so with O, N, and other symbols of the elements. When more than one atom is to be indicated in a molecule it is represented by a small numeral after the letter, as in the example H_2O .

The chemical equation is the mathematical way of writing chemical reactions, that is, the sum of the weights of the atoms on one side must equal the sum of the weight on the other side.

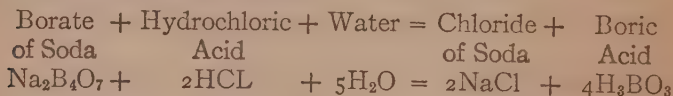
Example: —



Define and give the composition of an acid. What are the characteristics of an acid in solution? Name two indicators.

An acid is a hydrogen compound capable of reacting with a base and exchanging all or part of its hydrogen for a metal.

Composition of boric acid:



Characteristics of an acid in solution: has a sour taste, turns litmus red, displaces carbon dioxide when added to carbonates or bicarbonates. Strong acids also evolve hydrogen when added to metals.

Two indicators are: litmus paper and congo red.

Name and classify the compounds represented by the following chemical formulas:

H_2CO_3	$\text{Ca}(\text{OH})_2$
MgSO_4	HNO_3
KClO_3	KI
NH_4OH	NaHCO_3
H_2O_2	$\text{CaSO}_4 + 2\text{H}_2\text{O}$
H_2CO_3	Carbon dioxide, a gas.
MgSO_4	Magnesium sulphate, a salt of a metal.
KClO_3	Potassium chlorate, a salt of an alkaline metal.
NH_4OH	Ammonium hydroxide, an alkaline base.
H_2O_2	Hydrogen dioxide, a liquid.
$\text{Ca}(\text{OH})_2$	Calcium hydroxide, an alkaline earth.
HNO_3	Nitric acid, an acid.
KI	Potassium iodide, a halogen salt of an alkaline metal.
NaHCO_3	Sodium bicarbonate, an acid salt of an alkaline metal.
$\text{CaSO}_4 + 2\text{H}_2\text{O}$	Calcium sulphate, a salt of an alkaline earth.

Classify the following substances as element, mixture or compound: Iron; water; sugar solution; milk; lime stone; potassium permanganate; common table salt; sea water.

Select one of each type and tell why you think it should be classified as such.

Iron, element; water, compound; sugar solution, mixture; lime stone, compound; potassium permanganate, compound; common table salt, compound; sea water, mixture.

Iron is an element because it cannot be reduced to any more simple substance.

Discuss oxygen under the following headings:

1. Occurrence and History.
2. Preparation.
3. Properties (physical and chemical).
4. Uses.

1. Oxygen occurs both free and combined. 66 per cent. of the human body is oxygen. Forms $\frac{1}{5}$ volume of the air. $\frac{8}{9}$ by weight of all water. Found in most animal and vegetable compounds. Oxygen was discovered by Priestly in 1774.

2. Oxygen is prepared by heating manganese dioxide with sulphuric acids. $2\text{MnO}_2 + 2\text{H}_2\text{SO}_4 = 2\text{MnSO}_4 + 2\text{H}_2\text{O} + 2\text{O}_2$. Or by heating manganese dioxide with potassium chlorate: $2\text{KClO}_3 + 2\text{MnO}_2 = 2\text{MnO}_2 + 2\text{KCl} + 3\text{O}_2$. Also by heating mercuric oxid: $2\text{HgO} + \text{heat} = \text{Hg}_2 + \text{O}_2$.

3. Properties of oxygen: physically oxygen is an invisible gas, odorless, tasteless, and colorless. It is heavier than air and becomes liquid under pressure of 50 atmospheres at -244.44°F or -118°C . Chemically oxygen unites with all elements except fluorine.

4. Oxygen is used to support combustion and is essential to animal life.

Define salts, electrolytes.

Salts are compounds produced by the reaction of an acid or an acid oxid or hydroxide with a basic oxid or hydroxide or a metal.

An electrolyte is any substance which when placed in solution will conduct electricity. Acids, bases, and salts are electrolytes.

What are the chemical constituents of air?

Air is composed of about 80 parts of nitrogen and 20 parts of oxygen by volume.

For an external burn with carbolic acid what would you use?

For an external burn with carbolic acid, alcohol should be applied immediately, followed by dressings wet with a solution of magnesium sulphate.

Why should you be careful in handling nitric acid?

Nitric acid is a corrosive acid and burns the skin so that care must be taken in handling it.

What abnormal constituent precipitates in boiling urine?

Albumin is an abnormal constituent of urine that precipitates in boiling.

What is the difference between chloride of sodium and chloride of hydrargyrum?

Chloride of sodium is the common table salt, while chloride of hydrargyrum is mercuric chloride or corrosive sublimate, an irritant and corrosive poison, much used as an antiseptic.

What is the common name for hydrate of potassium?

The common name for hydrate of potassium is caustic potash or lye.

What branch of science treats of composition of substances and their changes?

The branch of science that treats of the composition of substances and their changes is called chemistry.

What is matter and is it destructible?

Matter is anything occupying space and having weight. Matter is not destructible.

What is the standard of specific gravity for liquids and solids?

The standard of specific gravity for liquids and solids is the weight of an equal quantity of water.

Name two solids which when mixed form a liquid.

Two solids which when mixed form a liquid are camphor and chloral hydrate.

Name one or more elements.

Oxygen, hydrogen, nitrogen, and carbon are elements.

Are natural waters ever pure?

No natural water is absolutely pure, excepting rain water collected under special conditions.

What dilutes oxygen to form air?

Nitrogen dilutes oxygen to form air.

Carbolic acid and lysol are often used in homes; what is the danger to be guarded against?

Carbolic acid is a poison that is caustic to the skin and every precaution must be taken in handling it. Antidotes should be on hand to prevent any fatality in case of accident.

Lysol is also somewhat caustic and a poisonous antiseptic. Solutions of carbolic acid or lysol must be labeled "POISON." Such solutions should not be left in drinking glasses or anywhere that they may be taken by accident.

When ammonia water is added to tincture of iodine, what takes place?

When ammonia water is added to tincture of iodine the iodine combines with the ammonium hydroxide to form ammonium iodide and water.



Ammonium Hydroxide + Iodine = Ammonium Iodide + Water.

Into what two great classes are all elements divided?

Elements are divided into metals and non-metals.

Name the physical properties of water.

The physical properties of water are: tasteless, odorless, colorless when in small quantity, boils at 212 F., freezes at 32 F.

How may water be made synthetically?

Water may be made synthetically by mixing two volumes of hydrogen with one of oxygen and exploding the mixture.

Give one example of a physical change.

The change from water (a liquid) to ice (a solid) is an example of a physical change.

Write names and symbols of the principal chemical elements found in the body.

Carbon, C	Phosphorus, P	Iron, Fe
Hydrogen, H	Sodium, Na	Silicon, Si
Oxygen, O	Potassium, K	Fluorine, F
Nitrogen, N	Calcium, Ca	Chlorine, Cl
Sulphur, S	Magnesium, Mg	Iodine, I

If you knew a patient had taken an acid poison what would you give him while waiting the arrival of a physician?

Give an alkali such as sodium bicarbonate.

What are the chemical formulas for sodium chloride and calcium bromide?

Sodium chloride, NaCl ; calcium bromide, CaBr_2 .

What is an acid? An alkali?

An acid is a hydrogen compound capable of reacting with a base or exchanging all or part of its hydrogen for a metal.

An alkali is a compound which forms salts with acids; soaps with fats; and changes litmus blue.

What do you understand by the atomic theory?

The atomic theory was formulated by Dr. John Dalton. It assumed that all matter is made up of indivisible atoms, and that whole atoms or multiples can unite with one another only in chemical union.

What is an element? A compound?

An element is a body that cannot be divided or reduced into anything more simple.

A compound is a substance made up of two or more simple constituents.

What is the purest water found in nature, and why?

Rain water is the purest water found in nature because it is distilled naturally.

What takes place when acids and bases are brought together?

When acids and bases are brought together they neutralize each other, and if an acid oxid or hydroxide reacts with a basic oxid or hydroxide the resulting compound is a salt.

Name some members of the chlorine family.

Some members of the chlorine family are: hydrochloric acid, chloric acid, hypochlorous acid, chlorous acid and perchloric acid.

What is carbolic acid chemically?

Chemically, carbolic acid is an alcohol (hydroxybenzene or phenol).

What is the chemical formula of hydrogen dioxide? What is released when it is placed in contact with an organic substance as an infected wound?

The chemical formula of hydrogen dioxide is H_2O_2 . When it is placed in contact with the organic material in an infected wound oxygen is released in minute bubbles.

What are the requirements for a non-luminous gas flame? What gives luminosity to a flame?

A non-luminous gas flame must have gas and air in such mixture that all the carbon is quickly consumed or oxidized. The presence of minute incandescent solid particles of carbon give luminosity to a flame.

Give symbols for iron, sodium, potassium, chlorine, iodine, oxygen, calcium, carbon, mercury, copper. Valence of each.

Iodine, I,	Valence, 1.	Sodium, Na,	Valence, 1.
Iron, Fe,	Valence, 2.	Oxygen, O,	Valence, 2.
Mercury, Hg,	Valence, 1 & 2.	Copper, Cu,	Valence, 1 & 2.
Potassium, K,	Valence, 1.	Calcium, Ca,	Valence, 2.
Chlorine, Cl,	Valence, 1.	Carbon, C,	Valence, 3.

What is the most active of the elements? How is glass etched?

Fluorine is the most active of elements.

The surface of the glass is first coated with a thin film of wax and the pattern drawn upon the wax with a sharp-pointed tool. A solution of hydrofluoric acid is poured over the wax surface

and attacks the exposed glass, while it has no action on the wax. When etched to a sufficient depth, the acid is washed off with water, and the wax removed by scraping and washing the plate with turpentine.

Explain and compare the effect on the boiling temperature of water of the pressure of equimolecular quantities of sugar and salt respectively.

When equimolecular quantities of two different salts are added to each of two specimens of water of equal weight, the boiling point will be raised the same degree in each sample tested regardless of the identity of the different salts used. This is because salts when dissolved are ionized, and each ion attaches itself to the molecule of water and by so doing tends to somewhat retard the rapid molecular motion necessary to turn the liquid into a gas—the “boiling point” is raised.

When equimolecular quantities of salt and sugar are added each to one of two different specimens of water of equal weight, the boiling point of the water containing the salt will be raised proportionately to the amount of salt added, while the boiling point of the water containing the sugar will not change. This is because sugar is a carbohydrate and not a salt, and does not break up into ions when dissolved, and as a consequence does not tend to slow the molecular motion of the water in which it has been dissolved.

Name and illustrate three types of chemical changes.

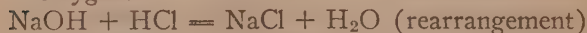
Three types of chemical changes are: combination, decomposition and rearrangement.



Calcium Oxide + Water = Calcium Hydroxide.



Potassium Chlorate (heated) = Potassium Chloride + Oxygen.



Sodium Hydroxide + Hydrochloric Acid = Sodium Chloride + Water.

What is oxidation? What makes a flame smoke?

Oxidation is the chemical combination of oxygen with another substance.

A flame smokes when it has a supply of oxygen not sufficient to combine with all the carbon present in the flame.

What is characteristic of acids? Of bases? Give formula for two common ones of each.

The characteristics of acids are that they ionize to give one or more ions containing hydrogen only. Also their sour taste, ability to turn blue litmus red, and general chemical activity in combining with metals and bases to form salts, are peculiar to acids.

Formulas: HCl	HNO ₃
Hydrochloric Acid.	Nitric Acid.

The characteristic of bases is that they turn red litmus blue, and when mixed with acids they produce salts.

Formulas: NaOH	Sodium Hydroxide.
Ca(OH) ₂	Calcium Hydroxide.

What is the action of an acid with litmus? Why do you not clean marble with an acid?

Acid turns the blue litmus paper red.

An acid is not used for cleaning marble because it corrodes marble by uniting with the lime of which it is a compound (calcium carbonate) and releases carbon dioxide.

How does a chemical antidote act on a poison? Give an antidote for carbolic acid and one for sodium hydroxide taken internally.

A chemical antidote is intended to change the chemical composition of the poisonous substance introduced into the system so that it will become a different substance with different qualities.

A chemical antidote for carbolic acid taken internally would be sodium sulphate, the intention being to form a sulfo-carbolate. For sodium hydroxide, water mixed with vinegar or lemon juice to neutralize its alkaline reaction would form an acetate, or a citrate, of soda.

What are the substances which bring about hydrolysis in the body? Name one which hydrolyzes starch.

Enzymes found in the alimentary tract which split sugars, starch, fats and proteins into simpler forms bring about hydrolysis in the body.

Saliva hydrolyzes starch into a mixture of maltose and dextrin.

$$2(C_6H_{12}O_6) + \text{Saliva} = C_{12}H_{22}O_{11} + H_2O$$

The function of proteins in the body is to furnish the materials needed for (1) the formation of new living matter, or (2) the replacement of living matter which is being constantly used up by chemical processes of metabolism.

Proteins are digested in the stomach and small intestine.

How can you test for oxygen? How is it made commercially?

The presence of oxygen can be detected (1) by its power of supporting combustion, (2) by its forming a reddish-brown gas when brought in contact with the colorless gas, nitrogen dioxide, and (3) by its being absorbed by potassium pyrogallate with formation of a deep brown compound. Oxygen is made commercially from barium oxide, and from air by liquefaction.

Write following equations:

- (1) Action of zinc with hydrochloric acid.
- (2) Action of sodium hydroxide with nitric acid.
- (3) Action of calcium hydroxide with sulphuric acid.
- (4) Action of silver nitrate with salt.
- (5) Action of sodium iodide with bromine water.

- (1) $\text{Zn} + 2\text{HCl} = \text{ZnCl}_2 + \text{H}_2$
- (2) $\text{NaOH} + \text{HNO}_3 = \text{NaNO}_3 + \text{H}_2\text{O}$
- (3) $\text{Ca}(\text{OH})_2 + \text{H}_2\text{SO}_4 = \text{CaSO}_4 + 2\text{H}_2\text{O}$
- (4) $\text{AgNO}_3 + \text{NaCl} = \text{AgCl} + \text{NaNO}_3$
- (5) $2\text{NaI} + 2\text{Br} = 2\text{NaBr} + \text{I}_2$

Classify as mixture, compound or element:

Carbon dioxide.

Iron rust.

Olive oil and water.

Glass.

Nitric acid.

Carbon dioxide, compound; olive oil and water, mixture; nitric acid, compound; iron rust, compound; glass, compound.

Define neutralization, spontaneous combustion.

When an acid solution and a basic solution are mixed in proper proportion, each loses its characteristic properties so that the resulting mixture is neither acid nor basic, they neutralize each other, hence the process is called neutralization.

Spontaneous combustion is a chemical reaction of oxygen with an organic substance, accompanied by an evolution of light and

heat, which is produced without the assistance of external heat or ignition, or other perceptible aid.

How does chlorine bleach?

Chlorine has strong affinity for hydrogen, and when organic colored substances are exposed to chlorine, this gas combines with the hydrogen which is usually present in combination with oxygen. This liberates the oxygen, which in turn acts as an oxidizer on the pigment and bleaches it.

Give composition and function of proteins in the body. Where are they digested?

Protein is found in all plants and organisms and contains nitrogen, carbon, hydrogen and oxygen, and frequently sulphur also, with small quantities of metallic elements. (For metabolic uses and mode of digestion see Dietetics.)

Name three polysaccharides. Name the double sugars.

Three polysaccharides ($C_6H_{12}O_6$) are: cellulose, dextrin, and starch. The double sugars ($C_{12}H_{22}O_{11}$) are: sucrose, maltose and lactose.

Give the test for glucose in the urine. For chlorids. For albumin.

(See Urinalysis.)

What is denatured alcohol? Is it a carbohydrate?

Denatured alcohol is that which is mixed with something sufficiently unpleasant in smell and taste to prevent its being taken internally. Usually gasoline or wood alcohol is used.

Denatured alcohol is not a carbohydrate.

Give the formula for chloroform, wood alcohol, ethyl alcohol, iodoform. Give the uses of each.

Chloroform ($CHCl_3$) is used as a solvent, antiseptic, anæsthetic, and as a preservative. Wood alcohol (CH_3OH) is used to make varnish, much used as a fuel in spirit lamps, to dissolve resin and shellac, and as a solvent for fats and oils.

Ethyl alcohol (C_2H_5HO) is used to obtain absolute alcohol by distillation; in medicine as a diffusible stimulant; in pharmacy as a solvent and an extractant. Wines and distilled liquors contain ethyl alcohol.

Iodoform (CHI_3) is used as an antiseptic in surgery.

PSYCHIATRIC AND NEUROLOGICAL NURSING

DEFINITIONS AND TERMS

What is psychology?

Psychology is the science of the mind or consciousness.

What is behavior? What controls behavior?

Behavior is the combined responses of an organism occurring in a definite manner under definite conditions of environment for a definite purpose.

Behavior is controlled by the inborn tendencies on part of the animal and also by his environment.

Is behavior inherent or can it be cultivated by environment?

Behavior is both inherent and cultivated by environment.

What is habit?

Habit is the propensity for an action acquired by frequent repetition, for example, the predisposition to resist or to succumb to climatic, poisonous, or pathological conditions.

What is adjustment—self-pity—martyrdom?

Adjustment is the changes an organism undergoes within its body in order that it may adapt itself to its external environment which is constantly changing.

Self-pity is marked compassion for the sufferings, real or otherwise, of oneself.

Martyrdom in the psychiatric sense, is the mental state aroused by the imagined suffering which an individual undergoes for his ideals or principles and is frequently of a delusional type.

What is emotion? What emotions are a nurse frequently called upon to control while nursing a mental patient?

An emotion is a pleasurable or painful state of consciousness arising as the result of a complex, indirect, interaction between an individual and his environment.

A nurse, while nursing a mental patient is frequently called upon to control the emotions of fear, anger, pity.

What is an obsession?

Obsessions are ideas, emotions, impulses which occupy consciousness persistently and irrespective of the desires of the subject, often intruding themselves at an inopportune time and occupying the field of consciousness to the exclusion of other ideas.

What is hysteria? Can it be controlled by reason?

Hysteria is an affection which is notably of mental origin and yet presents very definite physical symptoms. The outstanding fact in connection with this disorder is that its symptoms are emotional in origin, and that they may be caused to appear and to disappear by suggestion. Among the more important symptoms are: somnambulisms, peculiar types of delirium and definite kinds of convulsive attacks.

Hysterical attacks cannot be controlled by reason because the basis of this condition lies in the sub-conscious mind and out of the realm of reason.

What physical conditions sometimes lead to hysteria?

Illness or trauma accompanied by emotional strain sometimes lead to hysteria.

Name five causes of insanity.

Five causes of insanity are:

- Tainted heredity.
- Educational or environmental conditions.
- Age, sex and occupation.
- Organic and traumatic conditions.
- Toxic conditions.

Name five types of insanity.

Five types of insanity are:

- Paranoia.
- Paresis.
- Dementia præcox.
- Manic depressive psychosis.
- Senile psychosis.

Name five treatments employed in the care of the insane.

Five treatments employed in the care of the insane are:

Hydrotherapy.

Psychotherapy.

Occupational therapy.

Psychoanalysis.

Medication.

What is psychiatry?

Psychiatry is that branch of medicine concerned with the study and treatment of mental disorders.

What is meant by the term "psychoneurosis"?

By "psychoneurosis" is meant a mild mental disorder of psychogenic origin characterized by obsessions, compulsions, substitutions which are usually very disagreeable to the patient and frequently so distort his behavior that his social adjustment is often quite impossible. (Lewis.)

What are the psychoneuroses and neuroses?

Psychasthenia (obsession and compulsion neurosis), anxiety neurosis, neurasthenia, hysteria, anxiety-hysteria, hypochondria and tics.

What is meant by the term mania? What is the nurse's problem in dealing with manic patients?

Mania is violent insanity accompanied by wild excitement and rapid movements.

The nurse's problem is to prevent the patient from injuring himself or others.

What is insanity?

Insanity is a prolonged departure from the individual's normal standard of thinking, feeling and acting. (Burr.)

Insanity is a legal and sociological concept designating those members of a community who are so far from able to adjust to the ordinary social requirements that the community forcibly segregates them. (White.)

What are the objects of a course of mental and nervous diseases?

1. To impress upon the student nurse that mental and nervous

diseases are to be considered in the same manner as any other organic disorders or disease.

2. To teach the general symptomatology of these diseases.
3. To give a general knowledge of how to care for such patients.

What is phobia? Mention two phobias.

A phobia is a morbid fear. Fear of closed places is called claustrophobia. Fear of contamination or infection by dirt is known as misophobia.

Name two common types of delusion and illustrate.

(1) Delusions of grandeur, or *expansive delusions*, in which the victim imagines himself to be a great personage, as a king or pope; (2) delusions of insufficiency, or *depressive delusions*, in which individuals believe they are unworthy because of some act or condition, as the commission of a great sin, or extreme poverty.

Name the faculties of the mind.

Perception.

Thinking.

Volition.

What is sensation? perception? memory? judgment?

Sensation is the result of stimulation of the specialized sensory end organs.

Perception is the process of forming a mental image of an object presented to the senses.

Memory is the mental reproduction of impressive thoughts previously entertained and the recognition of them as belonging to previous experience.

Judgment is the process or the result of the process by which the mind selects a new and different idea from an association of ideas.

What is paranoia?

Paranoia is a mental disease characterized by well systematized delusions of either a grandiose or a persecutory nature.

What is meant by "involution melancholia"?

By "involution melancholia" is meant a depression, usually accompanied by agitation, which occurs at the involution period, that is, just before, during, or just after the menopause.

What is meant by "schizophrenia"?

By "schizophrenia" is meant a splitting of the personality or a disorder of the sensorium characterized by hallucinations, dissociations and feelings of influence. (Lewis.)

What is understood by "manic-depressive psychosis"?

By "manic-depressive psychosis" is meant a psychosis characterized by recurrent attacks of excitement, depression, or excitement alternating with depression; attacks usually separated by a period of normalcy.

Into what classes is dementia præcox commonly divided?
Catatonic, hebephrenic, paranoid and sometimes simple.

What is "flexibilitas cerea" or "waxy flexibility"?

Flexibilitas cerea is a condition in which the patient remains for a varying length of time in any position in which he may be placed, no matter how unnatural it may be.

What is meant by "stupor"?

Stupor is a condition in which there is a reduction of activity both mental and physical, of varying degrees. A patient in a moderately deep stupor has to be dressed, fed, bathed and otherwise cared for, is often mute and sometimes negativistic.

Define (a) hallucination and (b) delusion.

(a) An hallucination is a false sense impression and may belong to any of the senses but they are most commonly visual or auditory.

(b) A delusion is a false belief. For example, a patient may believe that he is King of Sweden, or that he is pursued by enemies who put poison in his food. The first mentioned delusion is described as "grandiose" and the second as "persecutory."

What is meant by the term "senile psychosis"?

By "senile psychosis" is meant a mental disorder associated with senility and characterized by loss of memory (particularly for recent events), defective judgment and sometimes also delusions and hallucinations, with gradual deterioration.

What is general paresis?

General paresis is a particular manifestation of parenchymatous syphilis of the central nervous system. It is a progressive

deteriorating process having a fatal termination. Although it takes widely varying forms, it is always characterized by defective judgment in the early stages and grandiose delusions with exalted states are common later. There are characteristic neurological conditions (Argyll-Robertson pupils, decreased or absent knee jerks, speech defect) and clearly defined serological findings in the advanced stages of the disease.

What is tabes dorsalis? Give symptoms and treatment.

Tabes dorsalis is a disease of the nervous system which is characterized clinically by sensory disturbances and incoördination of muscular action. It is caused by syphilis.

The symptoms are as follows:

Sharp, shooting pains, especially in the legs or trunk. Gradual loss of vision which may lead to total blindness. Bladder atony. Loss of sexual desire and power.

In the later stages there is an ataxia. The patient walks with difficulty, later becoming unable to walk at all.

Treatment consists of vigorous anti-luetic medication and symptomatic treatment by sedatives to control the pains.

Into what divisions is the central nervous system divided? Of what is each division composed? What is the function of each?

The nervous system is usually divided into the central nervous system and the autonomic nervous system. The central nervous system consists of the brain, spinal cord and peripheral nerves with their end organs; the autonomic nervous system consists of the sympathetic and parasympathetic nerves. The central nervous system is the organ of correlation and integration with motor, sensory and trophic functions; the function of the autonomic nervous system is integration of the vegetative activities and it is also said to have sensory as well as motor functions of an autonomic or involuntary nature. (Lewis.)

Describe a grand mal attack of epilepsy.

A grand mal attack may or may not be preceded by an aura. The tonic spasm, which occurs first, is usually accompanied by a characteristic cry. The sustained muscular contraction is followed by clonic convulsions, and usually a longer or shorter period of coma which is succeeded by a deep sleep. The tongue is frequently bitten and sphincter control lost.

Mention some conditions of the eyes that indicate nervous or mental disturbance.

Nystagmus, fixed pupils, irregular pupils, unequal pupils, widely dilated and strongly contracted pupils (pinpoint pupils), exophthalmos, squint.

What is meant by temperament?

Temperament is a term used to express the habitual emotional tone of the individual in his mental reactions.

What centres do we find in the medulla oblongata?

Respiratory centre

Vasomotor centre

Cardio-inhibitory centre

In what part of the brain do we find motor areas?

Sensory areas?

The motor areas are located on the upper and lateral surface of the cerebral cortex anterior to the central sulcus or fissure of Sylvia.

The sensory areas are located posterior to the central sulcus.

What is Huntington's chorea? What is hysteria psychosis?

Huntington's chorea is a hereditary disease characterized by irregular incoördinated movements, disturbance of speech and progressive mental deterioration.

Hysterical delirium, stupor and dream states especially are usually only transitory disturbances but they may sometimes be prolonged, and in such case these are called hysteria psychoses.

(a) Give three causes of insomnia. (b) Is persistent insomnia considered a serious condition?

(a) 1. Brain fatigue or persistent worry.

2. Indjudicious use of tea or coffee.

3. Sedentary habits or lack of outdoor exercise, especially if accompanied by tympanites.

(b) Persistent insomnia may become a serious condition as it will not only impair the health but may also give rise to mental disturbance and may be very difficult to cure.

596 STATE BOARD QUESTIONS AND ANSWERS

Why is it necessary for a nurse to have a knowledge of dementia præcox? Of manic-depressive psychosis?

Both dementia præcox patients and manic-depressive patients at times become violent and may injure themselves or others. Nurses should be familiar with the symptoms and progress of these diseases to be on guard against acts of violence. Manic-depressive patients may in the depressive stage attempt to destroy themselves.

Define: Neuron; psychosis; aphasia; paresis; delusion.

A neuron is a nerve cell and all its processes.

Psychosis is any mental disease, either temporary or permanent.

Aphasia is the defect of loss of the power of expression by speech, writings or signs.

Paresis is slight or incomplete paralysis. The term is also used as a synonym for the condition of general paralysis occurring in syphilitics.

Delusion is an insanely erroneous mental belief or fancy.

Name two diseases of nerves, two of the spinal cord and three of the brain. Give one important symptom of each.

Nerves: Neuritis: pain, sharp or boring, in the course of the nerve.

Herpes zoster: constitutional symptoms of illness with pain in the side. Rash over skin area of distribution of nerve involved.

Spinal cord: Tabes dorsalis: failure of coördination of movement of legs.

Anterior poliomyelitis: sudden paralysis of muscle groups, especially in the legs and arms.

Brain: Hydrocephalus: gradual enlargement of the head.

Tumor of brain; severe persistent headache and vomiting.

Acute encephalitis: fever with severe headache.

What are the symptoms of cerebral hæmorrhage?

Without unconsciousness in the patient, there may be headache, sensations of numbness or tingling or pains in the limbs, or even choreiform movements in the muscles of the opposite side. With unconsciousness the loss of consciousness marks the onset accompanied by complete relaxation of the muscular system. The

face is injected, sometimes cyanotic. The respirations are slow, noisy, and accompanied with stertor. The pulse is usually full, slow and of increased tension.

What is the meaning of the term spastic? Of the term flaccid?

Spastic implies spasms or continued contraction.

Flaccid means weak, soft. Muscles in a state of relaxation are said to be flaccid.

Name three mental habits to be discouraged in the early stages of dementia præcox.

Three mental habits to be discouraged in the early stages of dementia præcox are: Indifference to environment.

Overscrupulousness.

Tendency to seclusion.

What is understood by mental age?

By mental age is understood the age of a child as arbitrarily determined by tests of mental achievement, of the Simon-Binet type.

Name five types of behavior in a mental patient that should be reported to the physician by the nurse.

Five types of behavior in a mental patient reportable by the nurse to the physician are:

Mania.

Delirium.

Destructiveness.

Suicidal attempts.

Refusal to eat food.

Define: delirium tremens.

Delirium tremens is an acute mental disorder arising from the ingestion of an excessive amount of alcohol. The condition is often followed by permanent psychic injury.

Define: instincts.

Instincts are those innate powers or impulses by which animals are moved to perform advantageous acts.

Define: personality.

Personality is the awareness of self, which develops in human beings from infancy onwards. It is believed to be and actually

is largely dependent upon the perception and interpretation of sensory experiences by the individual.

Define: traumatic psychoses.

Traumatic psychoses are certain transitory conditions of delirious experiences following trauma which may leave a permanent constitutional change or not. (White.)

What group of glands in the body play an important part in the development of the body and in human behavior?

The ductless glands of the body play an important part in the development of the body and in human behavior.

What is meant by mental defectives?

Mental defectives are persons who from birth are mentally inferior because they do not possess those mental qualities which appear progressively with the physical development of the normal individual.

Name the lowest degree of mental deficiency.

The lowest degree of mental deficiency is called idiocy.

What is genius?

Genius is exalted intellectual powers capable of operating independently of tuition and training and marked by extraordinary faculty for original creations, inventions, discoveries and expressions in arts, crafts or science.

What is the difference between psychogenic and organic psychoses?

Psychogenic psychoses are so termed because their origins lie in the mentality alone, the higher nervous centres showing no physical change.

Organic psychoses, on the other hand, arise from some functional change either from disease or trauma, of the higher nervous centres.

What is mental hygiene? At what periods of life should it be particularly observed?

Mental hygiene is the application of all known and available means, social and medical, for counteracting the existing tendency to mental disease, disorders or defects. It aims to promote

and conserve the mental health of the individual and of the community.

Mental hygiene should be particularly observed during the pre-school, the school and adolescent periods also during pregnancy and the menopause.

DISEASES AND NURSING MEASURES

What observations should the nurse make in regard to convulsions?

1. Mode of onset.
2. Duration of attack.
3. Type of convulsions; general or limited to certain parts or part and whether tonic or clonic.
4. Patient's mental state during attack.
5. Condition of patient following attack.

What may be done by the nurse for mentally defective children?

They may be trained in habits of personal cleanliness, in control of temper, in various forms of manual labor, so as to become more or less useful members of society.

What are the commonest types of restraint used at the present time in the care of insane patients?

Camisoles, muffs and restraining sheets.

Why is mechanical restraint being used less and less in progressive institutions for mental diseases?

(1) Because it is liable to abuse in the hands of unscrupulous caretakers.

(2) Because it is being supplanted by more advanced therapeutic measures.

(3) Because it is actually injurious to many patients in causing an exacerbation of their mental difficulties.

What are the common types of treatment in mental disease?

- (1) Hydrotherapy.
- (2) Ergotherapy (occupational therapy).
- (3) Physiotherapy (massage, exercise, electrical treatments, etc.).
- (4) Psychotherapy.

What are the most commonly used forms of hydrotherapy?

Continuous baths, hot and cold packs, showers, spinal douches, sitz baths.

What are effects of?

- (a) Cold packs.
- (b) Hot packs.
- (c) Continuous baths.
- (d) Spinal douches.
- (e) Sitz baths.

The effects are as follows:

- (a) Tonic and sedative.
- (b) Eliminative.
- (c) Sedative and healing.
- (d) Tonic.
- (e) Sedative and healing.

What special qualifications should a nurse for nervous patients possess?

Tact, firmness, gentleness, fairness, good temper, habits of close observation, ability to mind her own business, implicit obedience, sympathy.

What faults should be especially avoided in psychiatric nursing?

Overtalkativeness, too great familiarity with patient, egotism, vanity, callousness and curiosity.

Why should a patient suffering from a functional psychosis be cared for in an institution rather than at home?

(1) Because it is difficult to improve in the same environment in which one broke down.

(2) Because any turn for the worse will be more quickly noted in an institution.

(3) Because the patient has a greater incentive to try to get well if a visit home is an object to be attained.

(4) Because any emergency is promptly cared for.

(5) Because necessary discipline can be more easily maintained.

What two qualities are essential to the nurse who has charge of a psychoneurotic patient?

Optimism and sympathy—understanding, not sentimentalism.

What should be particularly guarded against in the care of a psychoneurotic patient?

Unwise expression of morbid sympathy.

How may the nurse be a potent factor in the cure of a functional psychosis?

By stimulating the patient's interest in everyday problems and encouraging him to gradually resume the duties of life.

How may a nurse benefit a seriously deteriorated patient?

By attempts at re-education as to habits of personal cleanliness and care.

What should be the nurse's attitude in the face of mischievousness, stubbornness, destructiveness, etc. on the part of a psychotic patient?

Endless patience, firmness and kindness.

What attitude should the nurse take toward delusions expressed by the patient?

She should neither ridicule nor flatly deny nor encourage the patient in his delusions nor argue with him about them, but should sympathetically and tactfully discourage his belief in them.

Along what lines should the nurse's observations be most detailed?

- (1) Nature of hallucinations and delusions.
- (2) Variations of emotional state.
- (3) Development of insight.
- (4) Development of suicidal or homicidal trends.

What is drug addiction?

Drug addiction is a condition existing in the individual who after the habitual use of some drug, frequently the opium derivatives, is unable to stop its use.

What happens when the drug is suddenly withdrawn?

Sudden withdrawal of the drug causes at first uneasiness, restlessness. The limbs ache, the patient is tremulous and pre-

sents an anxious expression, the respirations are increased, the pulse formerly slow becomes rapid, and the heart palpitates; there is pain in the pit of the stomach, or griping abdominal pains with nausea.

If abstinence is carried further more alarming symptoms appear, such as cold sweats, labored breathing, rapid thready pulse, and the patient may pass to the verge of collapse.

Describe the treatment of drug addiction.

The treatment of drug addiction consists in the removal of the drug. This is done in one of three ways, the choice depending upon the case.

First: by abrupt withdrawal.

Second: by rapid reduction of the intake of the drug.

Third: by gradual reduction of the intake.

These three procedures all end with the permanent withdrawal of the drug. The treatment is always carried out in an institution such as a hospital or sanitarium and the patient has to be in bed and under constant supervision. The diet should be of soft wholesome food, the bowels should be free, and the patient's surroundings should be made as pleasant and cheerful as possible.

Give briefly the value in mental nursing of occupational therapy.

Occupational therapy serves to divert the attention and interests from a disintegrating indulgence in phantasy and so helps to get the patient back to a state of mind more accessible to direct appeal along psycho-therapeutic lines.

Give the nursing care of a case of involuntional psychosis.

The foremost consideration in these cases is the prevention of suicide. This will require constant surveillance both day and night and where the tendency is well developed it is rarely justifiable to attempt this treatment outside of an institution.

Insomnia is a frequent symptom for which the usual hypnotics, paraldehyde, sulfonal and trional are useful. Artificial feeding often has to be resorted to, as refusal of food is common. This procedure should be instituted as soon as the patient shows a disinclination to eat.

If apprehension and anxiety are very marked and associated

with much motor agitation and restlessness the attending physician may employ opium as a sedative. This procedure is only justifiable to tide over some exceptional access of anxious depression. In cases of extreme agitation hydrotherapy should be resorted to.

Mention some reasons why certain mental patients refuse food.

Certain mental patients refuse food because from fear of poisoning; others refuse food because of a negativistic attitude.

What methods could be resorted to induce them to eat?

In the case where fear of poisoning is the reason for refusal to eat, the nurse should try to allay the fears of the patient both by reasoning and by eating some of the food in the presence of the patient. In the case where refusal of food is due to a negativistic attitude, absolutely prohibiting the patient to eat the food and at the same time setting it before him will often cause the patient to eat.

What do you consider is the cause for the large increase in mental illness at the present time?

White and many other authorities claim that the large increase in mental illness at the present time is due to the ever increasing standards of civilization and because of the gradual influx of the population from the rural districts to the cities.

What is the general idea of the public towards mental institutions and patients who are mentally ill?

The general idea of the public towards mental institutions and mentally ill patients is that to have a member of one's family in one of these institutions is a stain on the family name. As for the patient himself, he considers that the majority of individuals incarcerated in these institutions are wildly maniacal.

Give the nursing care and treatment of a drug psychosis.

The patient should be isolated to prevent him from obtaining drugs. The drug should be stopped gradually while the general health is improved. Hydrotherapy is indicated in cases of excitement or mania. Physiotherapy is indicated as soon as the patient is able to do any work. Dietetic treatment is valuable, since the digestion is usually impaired.

In what class of mental cases is isolation particularly of value and why?

Drug psychoses. If not isolated the patients may obtain the offending drug and the condition be continued.

What are two important points in the care of paralyzed patients?

Prevention of bed sores.

Attention to the bowels and bladder.

What advice would you give a mother whose child was of a highly nervous and excitable disposition and who often gave way to sudden attacks of anger?

See to it that the child's hygiene is of the best, especially as to the hours of sleep. Keep her away from excitement as much as possible. Teach the child to be obedient and set a good example.

Why must a patient suffering from general paresis be watched constantly even when in apparently good condition?

(1) Because the outstanding characteristic of the early stages of the disease is poor judgment.

(2) Because he may at any time become dangerous to himself and others.

(3) Because convulsions may occur at any stage of the disease.

What should be done for a patient who has just suffered an apoplectic stroke?

Elevate head, turn on one side and prop with pillows to relieve difficult breathing. Disturb as little as possible while waiting for the doctor.

Why is it so important not to move a patient who has just had an apoplectic stroke?

Because the apoplexy is caused by hæmorrhage from a broken blood vessel into the brain substance and moving the patient is liable to prevent prompt clot formation and increase the hæmorrhage, thus enlarging the damaged area.

Give the care of suicidal patients.

1. Prevent patient from trying to destroy himself by keeping him away from high places and depriving him of instruments by which he may take his life.

2. Try to have him get his mind away from himself and his troubles, either imaginary or real, by keeping him employed in play or useful work.

Name five symptoms of insanity.

Five symptoms of insanity are: Hallucinations, illusions, obsessions, negativism, mania.

(a) What part of the central nervous system is chiefly affected in paresis? (b) What is the cause of paresis?

(a) The motor area of the central nervous system is chiefly affected.

(b) Paresis is caused by degeneration of the cells of the motor area of the nervous system.

What bodily function must receive special attention in a parietic?

Bladder activity must be constantly watched because of the tendency to retention and poor sphincter control.

What special precautions must be observed in the care of epileptics?

They must never be allowed to bathe alone, to have in their possession dangerous articles (knives, scissors, etc.), or to be alone in places where the sudden onset of a convulsion would be dangerous.

What is to be done for a patient in an epileptic convulsion?

Loosen clothing, place head on pillow, put roll of bandage or wedge between teeth if they are not already clenched, watch carefully and interfere only to prevent injury.

What are the sources of danger in an epileptic convulsion?

Strangulation, trauma, exhaustion, aspiration.

What is the general dietary rule for epileptics?

Easily digested foods in moderate amounts selected with a view to prevent constipation.

606 STATE BOARD QUESTIONS AND ANSWERS

For what reasons should a stuporous patient receive unusually thorough nursing care?

Because the circulation is poor on account of the inactivity, the bodily processes are abnormal, and the patient is more liable to trophic skin lesions than the ordinary individual.

What must be constantly guarded against in the case of any depressed patient?

Suicide.

What one thing should be done before calling a physician if you find a patient has hung himself?

Cut him down, start artificial respiration.

Suppose a patient refused treatments, meals, etc., should the same be enforced or omitted?

The physician's orders should be enforced with reasonable firmness.

Why must a strict watch be kept over patients with mental disease?

Because of the homicidal or suicidal tendencies which may develop in mental diseases.

Is it wise to offer sympathy to patients suffering from hysteria or neurasthenia?

Patients suffering from the psychic neuroses should be treated kindly but firmly, and not sympathized with.

State the marked symptoms in (a) epilepsy, (b) hysteria, (c) apoplexy.

(a) A loud cry and the patient becomes unconscious. Convulsions follow, the face is cyanosed, the respirations irregular and pupil reflexes lost. Convulsions subside and patient passes into deep sleep or coma, remaining so for several hours.

(b) Hysteria takes many forms. There may be apparent unconsciousness, or convulsions. The eyes seem fixed but the patient is really not unconscious in hysteria.

(c) Sudden vertigo, faintness and disturbed speech followed by coma. Often Cheyne-Stokes respiration. Pulse first slow and bounding. Eyes fixed, pupils varying but generally unequal.

Mention some points to be observed in the nursing care of epilepsy.

All irritating factors tending to cause new seizures should be avoided. The food should be non-irritating, no alcohol should be allowed, constipation should be overcome by prescribed methods and over-exercise or exertion avoided. When a seizure occurs the patient should be so placed as not to injure herself and a piece of soft wood or cork inserted between the teeth to prevent biting of the tongue. The clothing should be loosened. When the convulsive stage has passed the patient may be moved to bed. In repeated or severe attacks the patient should be kept in bed. If bromides are given the care of the skin and the mouth are important points.

Give apparatus and procedure for continuous bath.

Apparatus. Specially constructed tub fitted with canvas hammock, air pillow, bath thermometer, sheets.

Procedure: Fill tub with water at prescribed temperature and have patient lie in comfortable position with head on air pillow and body submerged. Cover loosely with sheet. Do not interfere with patient's activity except to prevent accident.

What precautions should be observed in giving continuous baths?

Temperature of water must be watched constantly, tested with hand as well as thermometer, patient must be watched constantly for signs of collapse, patient must never be left alone in tub.

Under what circumstances should a patient be force-fed?

If he is in good condition, when he has refused food for forty-eight hours; otherwise when there is persistent loss of weight below normal. He should never be force-fed until all methods of coaxing, commanding, etc., have failed.

What is the safest and best method of force-feeding?

Nasal tube feeding.

What types of patients have to be most often tube fed and why?

- (a) Catatonics because they are negativistic.
- (b) Depressed patients because they wish to die.

608 STATE BOARD QUESTIONS AND ANSWERS

(c) Paranoid patients because they have delusions about their food being poisoned.

(d) Manic patients because they are too agitated or too busy to eat.

What are the dangers of nasal tube feeding?

Passage of tube into trachea instead of œsophagus, aspiration of regurgitated material, exhaustion in case of prolonged struggle.

What is the procedure of tube feeding?

The cold, well-oiled tube is forced gently down the nose and into the œsophagus to a length of 40 cm. As soon as it is certain that there is no interference with breathing, the food may be poured slowly into the funnel without allowing air to be carried with it into the stomach. When the material has all passed, the tube should be pinched at the nostril and withdrawn quickly in order that no fluid may drip into the pharynx and be aspirated.

How many times a day and when should a patient be tubed?

Twice a day, eight hours apart, unless the patient is in very bad condition when three or even four feedings may be given. One or two feedings should be omitted every week or ten days to give an opportunity for the patient to become hungry.

In what position should a patient be placed for tube feeding?

Sitting in a high-back arm chair if he is not too resistive; otherwise lying in bed with a pillow under the head while the tube is being passed but without pillow while food is being poured.

What should be on the tray for a tube feeding?

Small stomach tube with funnel, mineral oil for lubricating, small pitcher with food, towels, a sheet.

What should constitute an ordinary tube feeding and in what order should the substances be given?

(1) One-half glass tap water.

(2) Any prescribed medication.

(3) One-half ounce fruit juice.

(4) Mixture of $2\frac{1}{2}$ glasses milk, 2 eggs, 1 tbsp. sugar, pinch salt, butter size of walnut.

The above should be at body temperature.

How should temperature be taken in an insane patient?

By rectum.

THE NEWER TYPE OF QUESTIONS

The so-called psychological type of questions have been engaging the attention of teachers for some time. Recently they have been utilized to a greater or lesser degree in training schools for nurses. A few State Boards of Examination for Nurses have also utilized them for examining in one or more branches.

USUAL TYPES

The types of question usually employed are the (1) "True-False," (2) Selection, or Multiple Response, (3) Completion.

The Selection and the Completion types of question may either involve a single or plural choice of words to complete the answers. These are the usual new forms of question employed in Nursing Education.

Analogy Statements are a type of examination test in which statements are made involving a choice of one of several indicated words in order to correctly complete the analogy.

Pertinent Statements are a type of examination test in which the student is required to make a pertinent statement about a word which is given.

VARIOUS EXAMPLES OF NEWER TESTS

Analogy Statements may be illustrated by the following, in which the student is asked to underline the correct word among the several submitted.

"Pathogenic bacteria are to bacteremia as saprophytic organisms are to—mastitis, nephritis, phlebitis, sapremia."

Pertinent Statements require the student to write a complete and pertinent statement about each word given, this statement to deal with nursing or nursing care. For example, such words as typhoid fever, lobar pneumonia, infected stools, etc., would be given, and the student would be expected to write some such statement as "Typhoid fever is usually treated by the use of hydrotherapy" or "Lobar pneumonia terminates by crisis."

618 STATE BOARD QUESTIONS AND ANSWERS

True-false Questions: In true-false questions a statement is made and the student is asked to indicate whether the statement made is true or false.

The true-false statement type of question was used in certain branches by a few of the State Examining Boards during 1927 and 1928, but its use is not general because of the fact that about 50 questions of this type must be asked in each branch in order to avoid the possibility of an applicant guessing his way through the test. The same is true in a lesser degree of the selection type of question.

Examples follow:

Secretions are waste substances, such as urine and perspiration occurring in body metabolism. (False).

The minimum temperature of the average sick room should be 70 degrees or over. (False).

Variola is a synonym for chicken-pox. (False).

A sprain is a partial dislocation with spontaneous reduction. (True).

Varicocele is a synonym for vaccination. (False).

Pregnancy is a common cause of amenorrhœa. (True).

Abortion means the expulsion of the fœtus during the first three months of pregnancy. (True).

There are 30 permanent teeth. (False).

Pasteurized milk is milk heated to 120 degrees Centigrade for 20 to 40 minutes and then cooled rapidly. (False).

When a baby is three months old it may be left alone to nurse from a bottle. (False).

Coxalgia means pain in the hip joint usually due to tuberculous arthritis. (True).

The Selection Type of Question: In this type of question also known as the "multiple response type," several separate statements, only one of which is correct, are submitted as part of a sentence. The student is asked to select the correct one or more words and to indicate his choice either by letter or number on the margin, or by striking out the incorrect words. Note these examples:

Gonorrhœal conjunctivitis in the new-born is best prevented by the instillation of (1) 1 per cent. nitrate of silver, (2) saturated solution of boric acid, (3) 10 per cent. solution of argyrol. (Strike out all except No. 1).

Vitamin C is best obtained from (1) red meats, (2) unpolished rice, (3) unpasteurized cream, (4) orange juice. (Strike out all except No. 4).

The blood supply of the liver comes from the following arteries and veins. (1) Splenic artery; (2) superior mesenteric artery; (3) portal vein; (4) left gastric artery; (5) hepatic artery; (6) inferior mesenteric vein. (Strike out all except No. 3 and No. 5).

The Completion Type of Question: This is a popular type of question in which one or more important portions of a statement are omitted, with the intent that the student shall supply the proper words or ideas. The following are examples:

The (1) ——— artery supplies the connective tissue of the liver and anastomoses with the branches of the (2) ——— vein in the liver lobules. Omitted words (1) **Hepatic**; (2) **Portal**.

A (1) ——— is a bacterium which derives its sustenance from dead organic material, while a (2) ——— is an organism that lives within a living host. Omitted words (1) **Saprophyte**; (2) **Parasite**.

Empyema is a sequel to (1) ——— and is cured by (2) ———. Omitted words (1) **acute pleurisy**; (2) **surgical drainage**.

Flies transmit to foods the bacteria that causes (1) ———, and, (2) ——— is another disease caused by contaminated food or water. Omitted words (1) **Typhoid fever**; (2) **Cholera**, (or **dysentery**.)

A. COMPLETION TYPE OF QUESTIONS

The completion type of question seems better adapted to examination in branches of nursing knowledge than the more complicated of the newer forms, and a few boards have employed it for examining in certain branches. Indeed one board used it in examinations for 6 out of the 10 branches in which candidates were examined in the past year.

The following are examples of completion type questions given in recent State Board Examinations.

In the ensuing questions the omitted words appear in *italics*.

ANATOMY AND PHYSIOLOGY

The liver is divided into.....*five*.....lobes; it is located.....*directly under the diaphragm and above the stomach and duodenum*.....

The ligaments supporting the uterus are.....*the broad ligaments and the round ligaments*.....

The organs contained in the female pelvis are.....*the ovaries, Fallopian tubes, a part of the vagina, the uterus, and part of the bladder and rectum*.....

The psoas magnus is located.....*in the pelvis, extending from the lumbar vertebral region to the great trochanter of the femur*.....

The platysma is located.....*between the upper front part of the chest and the lower jaw and neck*.....

The pectoralis major is located.....*between the clavicle and the sternum and upper ribs*.....

Muscles are classified as follows:.....*voluntary muscles and involuntary and cardiac muscle*.....

An example of each class is.....*voluntary—the biceps; involuntary—muscles of intestines; cardiac—heart muscle*.....

The mandible is classified as an.....*irregular*.....bone and is located.....*in the lower part of the face, being the lower jaw bone*.....

The sacrum is classified as a.....*flat*.....bone and is located.....*in the pelvis*.....

The clavicle is classified as a.....*long*.....bone and is located.....*between the sternum and the scapula*.....

Reflex action is.....*automatic action occurring without volition or will power*.....

There are.....*two*.....main types of white blood cells.....*called mononuclear and polynuclear*.....

The white blood cells are called.....*leucocytes*.....

The red blood cells are called.....*erythrocytes*.....

The spinal cord is composed of.....*gray and white matter—the latter consisting of bundles of nerve fibres, the former containing nerve cells*.....

The occipital bone is situated at *the base of the skull*.

The *synovial* membrane lines the capsule of the joints.

Two muscles of the abdomen are *rectus* and *transversalis*.

The white cell count of healthy blood is *5,000 to 10,000*.

The function of the red blood cells is *to carry oxygen*.

There are *four* main openings into the pharynx (nose, mouth, larynx, œsophagus).

The common term for myopia is *short sightedness*.

The chief digestion of fat occurs in the *small intestine*.

The secretion of the mammary glands during the first days of lactation is called *colostrum*.

Gastric juice is secreted by *the peptic glands*.

The cæcum is located at *the junction of the ileum with the colon*.

The value of the clotting of blood is *to prevent hæmorrhage*.

The *pulmonary* artery carries venous blood.

The sigmoid flexure occurs at *the junction of the transverse colon and the descending colon*.

The various respiratory sounds modified in lung diseases are known as *râles, ronchi, bronchial-breathing, broncophony*, etc.

The three divisions of the small intestine are *duodenum, jejunum and ileum*.

The science of the structure of the body and its organs is called.....*anatomy*.....

The tissue which forms cartilage is called.....*connective tissue*.....

The alimentary tract is lined with.....*mucous membrane*.....

The thoracic cavity contains the following organs.....*œsophagus, trachea, bronchi, lungs, heart and thymus*.....

Venous blood from the body enters the.....*right auricle*.....

One important organ of the endocrine system is.....*the thyroid gland*.....

The special nerve of hearing is named.....*auditory nerve*.....

The membranes covering the brain are.....*meninges*.....
.....

622 STATE BOARD QUESTIONS AND ANSWERS

Bile is secreted by.....*the liver*.....

The function of bile is.....*to emulsify fats and to stimulate peristalsis*.....

The adult intestinal tract is about.....*31 ft*.....in length.

The smallest unit of the nervous system is a.....*neuron*.....

The pericardium is a.....*serous*.....membrane.

Oxygen is carried to the tissues by means of.....*hemoglobin*.....

The largest muscle of the chest is called.....*pectoralis major*.....

The arteries supplying the heart with blood are the.....*coronary arteries*.....

The fifth cranial nerve is the.....*trigeminal*.....

The urinary system includes the following organs.....*kidneys, ureters, bladder and urethra*.....

The bridge between the mid-brain and the medulla oblongata is called.....*pons*.....

Physiology is the.....*science which treats of the function of the living organism and its parts*.....

Respiration is.....*the act or function of breathing*.....

Air reaches the lungs through the following channels.....*nose, naso-pharynx, pharynx, larynx, trachea and bronchi*.....

The membrane covering the bones is named.....*periosteum*..... Its function is.....*to act as a nutrient membrane of the bone and to furnish osteogenetic cells which enable bone to reproduce itself*.....

The membrane covering the lungs is named.....*pleura*.....

The membrane covering the heart is named.....*epicardium*.....

Biology is.....*the science of living organisms, their structure, life, growth and actions*.....

The Central Nervous System includes.....*brain, spinal cord, cranial and spinal nerves*.....

The second cranial nerve is named.....*the optic nerve*.....

The tenth cranial nerve is named.....*vagus or pneumogastric*.....

The functions of blood are as follows.....*to convey food and oxygen to the tissues, to convey waste products and carbon dioxide from the tissues, to provide fluid to the tissues, to aid excretion of waste substances, to equalize body temperature and to carry internal secretions*.....

Terms defined:

Hemoglobin.....*is a colloidal, protein like, iron-containing coloring matter of the red blood corpuscles*.....

Hemolysis.....*is the dissolution of red blood corpuscles*.....

Polycythemia.....*is an excess in the number of red blood corpuscles*.....

Erythrocytes.....*are red blood corpuscles*.....

Plasma.....*is the fluid portion of the blood*.....

The following are the names of the endocrine glands.....*pituitary, pineal, thyroid, thymus, adrenals, ovaries, testes, pancreas*.....

(a) The right lung is divided into.....*three lobes*
The left lung is divided into.....*two lobes*.....

(b) Each lung is enclosed in a.....*serous membrane*
.....*called*.....*pleura*.....

(a) The structure of the stomach is as follows.....*from within outward, mucous, submucous, muscular and peritoneal coats*.....

(b) The openings of the stomach are.....*cardiac and pyloric*.....

The divisions of the alimentary canal are as follows.....*mouth, pharynx, œsophagus, stomach and intestines*.....

The following blood vessels are located:

624 STATE BOARD QUESTIONS AND ANSWERS

Portal vein.....*begins at level of 2nd lumbar vertebra, runs upward behind pancreas into liver.....*

Radial artery.....*forearm.....*

Superior vena cava.....*thorax.....*

Carotid artery.....*neck.....*

Hepatic vein.....*liver.....*

The adrenal glands are located.....*at the upper pole of the kidneys.....*

Their function is.....*to secrete adrenalin.....*

There are.....*12.....*pairs of cranial nerves.

The pancreas is a.....*large, elongated racemose.....* gland.

It is located.....*below the stomach in relation to spleen and duodenum.....*

It secretes.....*amylase, trypsin and steapsin and has an internal secretion of insulin.....*

The divisions of the vertebral column are as follows.....*cervical, thoracic, lumbar, sacral and coccygeal.....*

The circulation of the blood through the heart is as follows*from the right auricle to right ventricle to lungs, by pulmonary artery, returning from lungs by pulmonary vein to left auricle then to left ventricle.....*

The divisions of the human skeleton are as follows.....*skull, vertebral column, thorax and extremities.....*

The bones of the upper extremity are.....*scapula, clavicle, humerus, radius, ulna, scaphoid, semilunar, cuneiform, pisiform, trapezium, trapezoid, os magnum, unciform, metacarpals and phalanges.....*

There are.....*eight.....*bones in each wrist.....

The bones of the fingers are named.....*phalanges.....*

The chief muscles of the back are.....*latissimus dorsi and erector spinæ.....*

The diaphragm is.....*a musculo-fibrous partition between the thoracic and abdominal cavities.....* Its function is*respiration.....*

The spinal cord is located.....*within the vertebral column*.....

There are.....*31*.....pairs of spinal nerves.....

The olfactory nerve controls.....*the sense of smell*.....

The pneumogastric nerve controls.....*rapidity of heart action and is also distributed to the lungs and stomach*.....

The small intestines are.....*about 22 feet*.....in length.

The large intestines are.....*about 57 inches*.....in length.

There are.....*two types of joints*..... An example of each is.....(a) *movable joint; the elbow joint*..... (b) *immovable joint; those between the flat bones of the skull, as the parietal bones*.....

The following are located:

Cystic duct.....*between the gall-bladder and the duodenum*.....

Semilunar valves.....*in the pulmonary artery as it emerges from the right ventricle*.

Ileum.....*the portion of the small intestine lying between the jejunum and the cæcum located in the region below and to the right of the umbilicus*.

The main divisions of the nervous system are.....(a) *cerebro-spinal system*; (b) *sympathetic system*.

There are.....*two*.....types of osseous tissue.....*compact and spongy*.

There are.....*two*.....kinds of bone-marrow, namely.....*red and yellow*.....

PÆDIATRICS

Symptoms of colic are.....*sharp cries, kicking of legs, distention of stomach or abdomen, mucous stools, sometimes chafing*.....

Preventive nursing care for colic includes.....*avoidance of overfeeding, regular hours for nursing, good mental and physical hygiene for the mother*.

Customary intervals of feeding for infants are.....*3 or 4 hours*.....

The appearance of green watery stool is due to *fermentation*.

The first defecation of the newborn is *meconium*.

Simple regurgitation of undigested food may be due to the fact of *too rapid feeding or overfeeding* or that *the child was disturbed after feeding*.

The chief dangers of poor milk are *infection and inadequate food value*.

A symptom of acute indigestion in children is *vomiting*.

Measles, chicken pox, pertussis and diphtheria are the most frequent infectious diseases of childhood.

Your method of giving an aural douche to a child is *wrap child in a sheet; place on back on edge of bed, affected ear outside. Place small dish on towel tucked under neck of child. Use the indicated solution in ear syringe or douche container, raising the latter not more than 3 feet above the level of the ear. Test temperature of fluid with back of hand. Place nozzle loosely in ear and see that the stream flows with moderate force*.

Two frequent causes for a sudden rise in temperature of children are *intestinal toxæmia and otitis media*.

The *umbilical cord* and the *eyes* are two sites very susceptible to infection in the new-born infant.

The normal breast-fed baby may have additional food starting at the age of *4 to 6 months*. Orange juice may be given at the age of *3 months*.

The nasal drip is a method of giving *water* to *dehydrated* infants.

Definition of the following:

Strabismus a squint

Enuresis involuntary urination

"False Croup" catarrhal laryngitis

"True Croup" diphtheria of the larynx.

Potts' Disease tuberculosis of the vertebra.

Scurvy is a disease caused by a *lack of vitamin C in the diet*.

A child should be taught to use a soft tooth-brush as soon as *the permanent teeth are present*.

The following symptoms would indicate that an infant is not being properly nourished: *depressed fontanelle; lack of proper weight ratio to height (Wood-Baldwin tables); lack of tissue turgor; fretfulness*.

The average hours of feeding an infant are *6 and 9 A.M., 12, 3, 6, 10 P.M. and 2 A.M., or 6 and 10 A.M., 2, 6, 10 P.M. and 2 A.M.*

The 3 main factors in the care of a premature baby are *avoidance of infection, sufficient warmth and if possible breast milk*.

A sufficient amount of milk per day for a child three years old is $1\frac{1}{2}$ to 2 pints.

Projectile vomiting in a newborn infant a month old or less indicates *pyloric spasm or stenosis*.

A hoarse brassy cry in a child suggests *catarrhal laryngitis*.

Four frequent causes of vomiting in infants are:

1. *Overfeeding*.
2. *Gastritis*.
3. *Pyloric spasm*.
4. *Onset of general infectious disease*.

The substituting of cow's milk for mother's milk is called *artificial feeding*.

Dentition usually begins at the age of *six months*.

The first or temporary teeth are 20 in number.

The temperature of the nursery during the bath should be 75° to 80° F.

Repeated colds and mouth breathing indicate *infected adenoids*.

Curds in the stool of a baby may be a sign of too much fat in the milk or of *overfeeding*.

The first two vegetables usually given to children are *spinach and carrot*.

The usual length of time it should take a baby to take its feeding is 15 to 20 minutes.

The two best cereals for infants are *farina and oatmeal*.

An infant should gain 6 to 7 inches in length the first year.

The average pulse rate at 6 months is 105 to 115 during sleep (Holt).

The average rate of respiration at 6 months is 24 to 30 during sleep (Holt).

The ideal weight of an infant at birth (male) is 7.5 pounds.

The ideal weight of an infant at birth (female) is 7.1 pounds.

The average gain in weight the first year should be double birth weight at 6 months; triple birth weight at 1 year.

By supplementary feeding is meant *an artificial or bottle feeding to take the place of one or more breast feedings*.

Three factors causing malnutrition are *lack of food, lack of proper food balance, or disease*.

Inanition fever in the new-born is due to *lack of fluid*.

Tetany is a condition usually due to *lack of a proper amount of calcium in the blood*.

Foods other than milk should be added to the child's diet as follows:

- (a) Vegetables at the age of *six months*.
- (b) Cereals at the age of *four to six months*.
- (c) Eggs at the age of *nine to twelve months*.
- (d) Meat at the age of *twelve to fifteen months*.

The three best vegetables for a child are *spinach, carrots and potatoes*.

Four simple desserts which may be given to children between four and six years of age are *gelatine, tapioca puddings, custard, junket*.

The daily morning nap should be continued until the child is at least *2 years* of age. *In addition 12 hours sleep every night should be the rule.*

In making a mustard paste for an infant of one year use *one* part of mustard to *five* parts of flour.

Poliomyelitis attacks children most frequently under *four* years of age. The treatment is by use of *immune serum in the preparalytic stage*.

The nursing care in the acute stage is *immobilization, relief of muscle tension by changing position, proper nutrition, and when indicated, hydrotherapy*.

A frequent sequel of pneumonia in children is *empyema*.

This is due to *infection of the pleural membrane with the causative organism*.

Some important benefits of breast feeding are.....*increased immunity against infection and better tolerance of food*

Some reasons for early weaning are.....*tuberculosis, malignant disease or pregnancy in the mother*.

At from *12 to 15 months* the average child should have.....*12 teeth.....namely.....the four upper incisors and the four lower incisors, and usually the four first molars*.

The normal infant should gain from.....*five.....toseven.....*ounces weekly during the first six months, and from.....*three.....to.....five.....*ounces during the second six months.

Chorea is.....*a convulsive condition often accompanying heart disease and inflammatory rheumatism*.

Important points in nursing care in chorea.....*quiet, semi-light, and warm baths or packs to control excessive motion.*

Poliomyelitis is.....*also called infantile paralysis, and is an inflammation of the anterior horns of the spinal cord which destroys motor nerve cells.*

Hydrocephalus is.....*a disease in which cerebral fluid accumulates inside the skull and causes enlargement of the cranium.*

Conjunctivitis is.....*an inflammation of the membrane which lines the eyelids and covers the eyeballs.....*

Pink eye is.....*a folk term for conjunctivitis.....*

Important points regarding exercise for the infant and young child.....*The infant exercises by crying at intervals during the day. He should be outdoors in all suitable weather. The older child should do some walking in the open air each day and also sleep in the open air.*

Important points in the clothing of infants are.....*to have the clothing suitable for indoor temperatures with sufficient heavier additional clothing for outdoor wear.*

Pasteurization of milk is.....*advisable in order to destroy fermentative bacteria, tubercle and dysentery bacilli and other pathogenic organisms.*

Three common causes of convulsions in children are *indigestion, worms, tetany.*

Pyloric stenosis is *an hypertrophy of the pyloric muscle of the stomach with obstruction.*

The protein of human milk is *higher in percentage* than that of cow's milk.

Pædiatrics is *the study of the child in health and disease.*

Common sense plays an important rôle in the care of children.

The natural food for the infant is *human milk.*

The most important qualities for pædiatric nurses are *patience and intelligence.*

The symptoms of rickets are *enlarged epiphyses, square head, Harrison's groove, rachitic rosary, diminished phosphorus and calcium in blood serum.*

The anterior fontanelle closes at the age of *18 months.*

Cretinism is a deficiency of the *thyroid secretion.*

Modification of milk means.....*the dilution of milk with water and the addition of other substances, notably sugar.*

630 STATE BOARD QUESTIONS AND ANSWERS

Two methods of milk modification are the.....percentage.....method and the.....caloric.....method.....also sometimes called the dilution.....method.

The diet of a child of from 9 to 12 months should include.....a quart of milk, cereals, bread or toast, green and starch vegetables, orange juice and cod-liver oil.....

Orange juice is first given to infants usually at the age of.....2 or 3 months.....amount.....15 to 60 drops..... Beneficial effects of orange juice.....prevents incipient or acute scurvy..... A substitute for orange juice is.....tomato juice.

The most frequent sites of tuberculosis in children are.....the lymph-nodes, especially of the bronchi..... In adults.....the apices of the lungs.....

MEDICAL AND MENTAL NURSING AND CONTAGIOUS DISEASES

Diphtheria antitoxin is obtained from the.....blood serum of immunized horses.....

Special points to be remembered in the nursing care of measles are.....isolation of patient, protection of eyes against glare, care of skin to relieve itching, care of mucous surfaces..... The symptoms of measles are.....photophobia, laryngeal catarrh, a crescent-shaped purplish-pink eruption which appears in blotches, and fever..... The rash in measles first appears upon the.....fourth day of fever.

The Schick test is a test for.....immunity against diphtheria..... The Schick test procedure is as follows:..... 0.2 c.c. of a freshly prepared solution of diphtheria toxin diluted so that 0.2 c.c. contains one (1) skin test dose, is injected into, not under, the skin of the forearm. A control with boiled toxin is made on the opposite arm. Schick-positive patients will show a red macule about 0.5 to 1 cm. in diameter in 24 hours.

(a) The period of incubation in diphtheria is.....1 to 10 days.....

(b) The period of incubation in scarlet fever is.....1 to 7 days.....

(c) The period of incubation in measles is10 to 14 days.....

Terms defined:

(a) Sequelæ.....*Any pathological condition occurring at the end of a disease.....*

(b) Carrier of infection.....*One who distributes pathogenic bacteria without being himself clinically ill with the disease.*

(c) Quarantine.....*The placing of individuals and buildings under regulations which forbid the entrance or exit of designated persons, with the object in view of preventing the spread of a disease.*

General rules in disinfection are..... (a) For linen.....*Boiling.....* (b) For discharges and excreta.....*burning, mixing with five times their bulk of quicklime for four hours and burying, or mixing with four times their bulk of 5 per cent. cresol solution for three hours.....*

Symptoms of influenza are.....*pain in head, sore throat, often later a rasping cough, prostration and a fluctuating temperature.*

The nursing care of influenza is.....*rest, liquid food, hydrotherapy.....*

The symptoms of erysipelas are.....*a bright red eruption, sharply marked off from normal skin, with fever.....*

The germ causing erysipelas is.....*a hæmolytic streptococcus, the streptococcus erysipelatis.....*

It gains entrance to the body through.....*a minute abrasion of the epidermis.....*

Important precautions to be used in the nursing care of tuberculosis patients.....*to disinfect or destroy the sputum of the patient, to give proper and suitable nourishment at proper intervals and to keep the patient in the open air if possible.*

Diapedesis is the passage of leucocytes through the walls of capillaries by means of their amœboid motion.

The danger in preparing to administer barium sulphate is the possible use of the poisonous barium sulphide in mistake.

Volkman's contracture is a condition of atrophy of muscles and tendons in the forearm, arm and hand caused by excessively tight bandaging.

A patient receiving an over-dose of insulin may suffer from a condition known as *insulin shock*, shown by hunger, pallor, dilated pupils, slow pulse, carphologia; and sometimes unconsciousness.

Terms defined:

Coryza is *inflammation of the nasal passages*.

Œdema is *infiltration of serum into the tissues of the body*.

Syncope is *sudden loss of consciousness due to cerebral anæmia*.

Colitis is *inflammation of the colon*.

A state of coma in which the patient has an appearance of wakefulness is called *coma-virgil*.

In hæmorrhage from the lungs the blood is *bright red* in color, and *frothy* in character; in hæmorrhage from the bowels the blood is *dark red* or *tarry* in character.

Diabetes is a disturbance of *metabolism* due to the inability of the tissues to metabolize *fats and carbohydrates*.

Two serious complications in typhoid fever are *hæmorrhage and perforation of the bowel*.

Mental disease occurring late in life is called *senile dementia*.

Dementia præcox is a mental disorder occurring early in life.

Paraplegia is *paralysis of the lower extremities*.

Grand mal is a form of *epilepsy*.

Terms used in describing a cough are *productive and non-productive*. Terms used in describing sputum are *glairy, tenacious, watery, purulent*.

Rules for applying heat to an unconscious person are *never to apply heat directly to body and to test temperature of hot water bag before applying*.

The correct temperature of the solution in hypodermoclysis is *110° F.*

Possible danger of tympanites is *embarrassment to heart and respiration*.

Nursing care in the prevention of hypostatic congestion consists in *frequent changing of position of body*.

Pus in the pleural cavity is called *empyema*.

Suicidal attempts must be carefully guarded against in the care of depressed patients.

A permissible type of restraint in the treatment of mental disease is *the restraining sheet*.

COMMUNICABLE DISEASES

Four communicable diseases most common in children are
.....*measles, whooping cough, chicken pox, mumps*.....

One serious complication of scarlet fever is.....*nephritis*.....

A disease characterized by a strawberry tongue is.....*scarlet fever*.....

A disease accompanied by a rash with a definite line of demarcation is.....*erysipelas*.....

The most characteristic early symptom of measles is.....*nasopharyngitis*.....

One complication common to whooping cough is.....*bronchopneumonia*.....

Isolation means the *segregation of the patient*.

Two (2) diseases that can be prevented by vaccination are.....*smallpox and typhoid fever*.....

Desquamation means.....*the shedding of skin in scales or sheets*.....

The characteristic rash of chicken pox is as follows.....*superficial bleb-like lesion, lacking an infiltrated areola and seen in all stages of its development*.....

Koplik's spots appear in the.....*measles*.....in.....*mouth*.....

The most common form of tuberculosis is.....*pulmonary*.....

Five (5) eruptive communicable diseases are.....*measles, chicken pox, scarlet fever, smallpox, epidemic meningitis*.....

The diseases most often transmitted by carriers are.....*diphtheria and typhoid fever*.....

Four (4) communicable diseases combated by serum-therapy are.....*diphtheria, scarlet fever, pneumonia, epidemic meningitis*.....

Early symptoms common to most communicable diseases are.....*malaise, anorexia, fever, nausea and vomiting, headache*.....

The *gonococcus* causes gonorrhœa.

The following diseases may be transmitted in milk: *typhoid fever, scarlet fever, dysentery*.

Complications common to diphtheria are.....*myocarditis and laryngitis*.....

634 STATE BOARD QUESTIONS AND ANSWERS

Toxin-antitoxin is used in immunizing a patient against
.....*diphtheria*.....

An alarming symptom to be reported immediately to the physician in each of the following diseases is:

In typhoid fever.....*sudden drop in temperature*
.....

In diphtheria.....*cyanosis*.....

In scarlet fever.....*pain over mastoid*.....

MATERIA MEDICA AND THERAPEUTICS

The average dose of atophan is.....*1 gram or 15 grains*
.....

Drugs which induce sleep are called.....*hypnotics*.....

By the cumulative action of a drug is meant.....*an action suddenly increasing in intensity through a sudden absorption of an accumulated quantity of the drug in the system*.....

Two respiratory stimulants are.....*atropine and caffeine*
.....

The methods of administering (by mouth, inhalation, hypodermic, etc.) the following drugs are:

Pituitrin.....*by hypodermic or intramuscular injection*.....

Tincture benzoin.....*by inhalation or external application*.....

Barbital.....*by mouth*.....

Sodium cacodylate.....*by hypodermic, intravenous or intramuscular injection*.....

The derivation of:

Opium is derived from.....*the juice of the seed pod of an Oriental poppy*.....

Digitalis is derived from.....*the leaves of the English foxglove*.....

Pepsin is derived from.....*the scrapings of the mucous membrane of the hog's stomach*.....

Quinine is from.....*the bark of the cinchona tree, also called Peruvian bark*.....

By the active principle of a drug is meant.....*the most concentrated substance from which the drug derives its therapeutic properties*.....

The active ingredient of:

Dover's Powder is.....*opium*.....

Fowler's Solution is.....*arsenic*.....

Hoffman's Anodyne is.....*alcohol*.....

The common name of magnesium sulphate is.....*Epsom salt*.....

An emergency heart stimulant is.....*caffeine—sodium benzoate*.....

Two local anæsthetics are.....*cocaine and novocaine*.....

A drug given to reduce temperature is called an.....*anti-pyretic*.....

Cod liver oil is derived from the.....*animal kingdom*.....

Cascara is derived from the.....*vegetable kingdom*.....

Silver nitrate is derived from the.....*mineral kingdom*.....

For the purpose of study, drugs are divided into.....*two*.....
.....*general classes, namely.....organic and inorganic drugs*.....

Typhoid fever is frequently prevented by use of the.....
typhoid vaccine.....

The immunity usually lasts.....*about three years*.....

Insulin is used in the treatment of.....*diabetes mellitus*.....

It is obtained from.....*the pancreas of animals*.....
and given.....*hypodermically*.....

Three vegetable purgatives are.....*aloes, cascara and castor oil*.....

Two drugs which come under the Harrison Law are.....
morphine and codeine.....

The Harrison Drug Law was passed to regulate.....*the*
possession, purchase, sale and prescribing of habit-forming drugs,
such as opium, morphine, cocaine.....

636 STATE BOARD QUESTIONS AND ANSWERS

A good antidote for lye is.....*vinegar, diluted, followed by milk and white of egg and olive oil*.....

The antidote for bichloride of mercury is.....*egg albumin*.....

.....*ether*.....is a general anæsthetic.

A drug obtained from the Purple Foxglove is called.....*digitalis*.....

A drug given in ascending doses is.....*Fowler's solution*.....

A drug which relieves formation of gas in the stomach is called a.....*carminative*.....

Radium is valuable in the treatment of.....*cancer*.....

The usual dose of calomel is..... $\frac{1}{2}$ to $2\frac{1}{2}$ grains.....

Calomel is a salt of.....*mercury*.....

Drugs are obtained from three sources.....*animal, vegetable and mineral kingdoms*.....

Three liquid preparations of drugs are.....*aromatic spirit of ammonia, tincture of nux vomica and fluidextract of ergot*.

Three solid preparations of drugs are.....*powder of ipecac and opium, mass of mercury (blue mass) and compound cathartic pills*.....

Two drugs frequently given in treatment of rheumatism are.....*sodium salicylate and atophan*.....

The only emetic which is given hypodermically is *apomorphine*.

A diuretic is an agent which *increases* the flow of urine.

If the doctor ordered morphine sulphate gr. $\frac{1}{12}$ and I had only morphine sulphate gr. $\frac{1}{4}$, I would give *one-third* of the $\frac{1}{4}$ gr. tablet. ●

Adrenalin is derived from.....*the suprarenal gland*.

Lanolin is derived from.....*the purified fat of sheep wool*.

Definition of:

Heliotherapy.....*is the treatment of disease by exposing the body to the sun's rays*.

Radiology.....*is the study of radio-activity and radio-active substances*.

Drugs which cause dilation of the pupil of the eye are called
.....*mydriatic*.

An expectorant is a drug given to.....*stimulate secretion of mucus*.

Two drugs in the treatment of specific diseases are.....
quinine and serum antidiphthericum.

An example of a counterirritant is.....*a mustard plaster*.

The common name of Phenol is.....*carbolic acid*.

The physiological action of digifolin is.....*to strengthen and slow heart*.

The physiological action of luminal is.....*to produce sleep*.

The physiological action of paraldehyde.....*to produce sleep*.

An antiseptic used for mucous membrane is.....*boric acid solution*.

A saline purgative is.....*magnesium sulphate*.

The average dose is.....*one tablespoonful*.

A urinary antiseptic is.....*urotropin*.

The average dose is.....*ten grains*.

Two drugs used in uterine hæmorrhage are.....*ergot and pituitrin*.

The physiological action of the following:

Ipecac.....is an emetic and expectorant.

The general treatment of a case of poisoning when type of poisoning is unknown is.....*the production of prompt emesis, and if prostration is present, stimulation by an enema of black coffee.....*

By the therapeutic action of a drug is meant.....*a physiological action which will offset an opposite pathological action produced by a disease in the body.....*

By the physiological action of a drug is meant.....*its effect on the vital processes of a normal animal.....*

HYGIENE AND BACTERIOLOGY

Terms defined:

Parasite.....*an organism which lives on another.....*

Anti-toxin.....*A substance which neutralizes toxin.....*

638 STATE BOARD QUESTIONS AND ANSWERS

Flagella.....*Thread-like processes in certain lower organisms and in some living cells which are imbued with motion.....*

Pathogenic bacteria.....*Bacteria capable of producing disease in a living host.....*

An acid-fast bacterium is one which.....*is not decolorized by acid after having been stained with carbol fuchsin.....*

An example is.....*the tubercle, or Koch bacillus.....*

One way in which acquired immunity may be obtained is by*having an immunizing dose of antitoxin injected.....*

The germ causing diphtheria is.....*the Klebs-Löffler bacillus.....*
.....*Its shape is.....rod-shaped with clubbed ends.....*

Requisites for the growth of bacteria are.....*sufficient constant warmth, moisture, and a suitable medium.....*

Bacteria are destroyed by.....*heat and chemical action.....*

Some common ways in which personal hygienic rules are disregarded are.....*lack of bathing, lack of ventilation in sleeping rooms, neglect of teeth.....*

Air may be contaminated in the sick room by.....*lack of ventilation, excessive number of visitors, or by the odor of excreta of patient.....*

The *treponema pallidum* causes syphilis.

The *gonococcus* causes gonorrhœa.

The following diseases may be transmitted in milk: *typhoid fever, scarlet fever, dysentery.*

A person who carries germs capable of being transmitted to and infecting others, but himself not necessarily suffering at the time from the disease caused by the germ, is called a *healthy carrier.*

Two methods used for the purification of water are.....*distillation and filtration.*

Important points in ventilating a sick room are.....*to provide for constant changing of pure air at proper temperature and moisture.*

The approximate amount of water an adult should drink daily is *about 2000 c.c.*

The most hygienic system of heating is by.....*steam.*

The Schick test is used to determine susceptibility to *diphtheria*. The group of organisms resembling a bunch of grapes is *staphylococcus*.

Organisms growing in pairs are *diplococci*.

The organism causing tetanus enters the body through *the wound*.

A plant or animal which lives upon or within a living organism is called a *parasite*.

Malaria is an insect borne disease.

One germ responsible for pus in wounds is *streptococcus*.

The *treponema pallidum* is a *spiral* shaped bacterium.

The organism causing typhoid fever is called the *bacillus typhosus*.

The proper disposal of garbage is by *burning*.

Milk containers should be cleaned by *thorough washing with soap and water, being rinsed and sterilized with boiling water*.

Air-borne diseases may be spread by droplet infection.

The term "Public Sanitation" means *sanitation applied to the community or state by authority*.

Air is a source of infection in proportion to the amount of *pathogenic organisms* that it contains.

Aërobic bacteria are those *living in the presence of oxygen*.

Anaërobic bacteria are those *which thrive in the absence of oxygen*.

Facultative bacteria are those *which thrive with or without oxygen*.

Boils are most frequently caused by *staphylococci*.

The calmette test is used in the diagnosis of *tuberculosis*. The method consists in *the instillation of the toxin of the bacilli into the eye*.

The *bacillus* of Bordet and Gengou is the germ causing *pertussis*.

Simple hygienic rules for daily living are *proper food, adequate rest, work, recreation, exercise, sunshine, fresh air and proper habits*.

The two pathogenic bacteria found in water are *typhoid bacillus* and *cholera spirillum*.

The articles necessary for obtaining a throat culture are *culture tube, cotton swab and tongue depressor*.

Bacteriologically speaking, entirely free of living organisms, may be termed *sterile*.

An organic body upon which parasites live is called the *host*.

The property of pus formation is called *pyogenic*.

Immunity to diphtheria depends on the presence of *antitoxin* in the blood.

The tetanus bacillus is a *toxin* forming organism.

Name one other organism which may cause meningitis besides the meningococcus; *the tubercle bacillus*.

Define: Poliomyelitis; *an infectious disease beginning in the upper respiratory passages, invading the anterior horns of the spinal cord and causing motor paralysis*.

Define: etiology; *the exciting and contributing factors to a disease*.

Name six germicidal agents and give strength usually used:

Phenol, 1 to 5 per cent.

Formaldehyde, 5 to 10 per cent.

Solution sodium hypochlorite, 100 to 50 per cent.

Mercuric chloride, 1 to 500 to 1 to 1000

Iodine, 10 per cent.

Mercurochrome, 5 per cent.

The fly may carry the following diseases: *typhoid, dysentery*.

The flea transmits the *bubonic plague*.

The mosquito transmits *malaria or yellow fever*.

The tsetse fly transmits *African sleeping sickness*.

An immunizing dose, that is, such as will prevent one who has been exposed to diphtheria is 500 to 2000 units of antitoxin, depending upon the age or size of the individual.

Pasteur perfected the rabies vaccine.

The Von Pirquet Test is given to *determine a past or present tubercular infection*.

The *Widal* test is given for typhoid fever.

The *Wassermann* test is given for syphilis.

The diphtheria bacillus is usually spoken of as *Klebs-Loeffler* bacillus.

Give four varieties of cocci: *pneumococci, gonococci, diplococcus intracellularis meningitidis, streptococci*.

The *pneumococcus* germ causes pneumonia.

Bodily resistance to disease may be established by.....
induction of active or passive immunity.....

Two factors essential for success in the suppression of an epidemic are..... (1) *identification of the cause* and (2) *control of the distribution of the contagion.....*

The tetanus bacillus is.....*bristle or rod*.....shaped.
 The precaution to be taken when there is suspected invasion of the tetanus bacillus is.....*inject a therapeutic dose of tetanus antitoxin*.....

URINALYSIS

Terms defined:

Polyuria.....*Excessive quantity of urine*.....
 Anuria.....*Lack of urination*.....
 Glycosuria.....*Presence of sugar in urine*.....
 Albuminuria.....*Presence of albumin in urine*.....
 Dysuria.....*Painful urination*.....

The abnormal findings in a specimen of urine which would necessitate a microscopic examination may be.....*turbidity, a red color suggesting blood, an extremely low or high specific gravity, or the presence of albumin*.....

Acid urine is determined by.....*testing with blue litmus which turns red*.....

Alkaline urine is determined by.....*testing with red litmus which turns blue*.....

One disease which increases the output of urine is.....*diabetes mellitus*.....

Normal findings in a specimen of urine are.....*pale yellow in color, S. G. 1.010 to 1.020, no albumin, no sugar, no acetone or diacetic acid; microscopically a few epithelial cells; 24-hour quantity 1206 to 1509 c.c.*

The proper method of collecting sputum for clinical examination is as follows:.....*in a sterilized, wide-mouthed bottle into which the patient expectorates under the supervision of the nurse. The bottle should be corked with a sterile cork and labeled.*

The normal amount of urine voided in 24 hours is 1200 to 1500 c.c.

Two pathological causes for a decreased amount are *severe diarrhœa and acute nephritis*.

A simple test for albumin is the *heat coagulation test*.

The reaction of normal urine is *acid*.

The specific gravity of normal urine is *from 1.017-1.020*.

The principal abnormal constituent found in the urine of a diabetic patient is *sugar*.

An abnormal constituent found in the urine of a patient suffering from acute nephritis is *albumin*.

DIETETICS

The best cut of beef for broth is the.....*round*.

Three articles of food which should be omitted in an obesity diet are: (a).....*fat*, (b).....*sugar*, (c).....*starch*.

Carbohydrates are stored in the liver in the form of.....*glycogen*.

The laxative effect of vegetables is due to the *cellulose content*.

A term used to describe the amount of energy expended by a person in bed and at complete rest is.....*basal metabolism*.

Fat soluble A vitamin is found in.....*cod liver oil*.

Water soluble B vitamin is found in.....*leaves of green vegetables and yeast*.

Water soluble C vitamin is found in *citrous fruits (oranges, lemons) and tomatoes*.

The active constituent of coffee is.....*caffeine*.

The active constituent of tea is.....*theophyllin*.

The difference between broiling and frying is *that broiling is cooking over, or under, a hot flame while frying is cooking in hot fat*.

Definition of dietotherapy is *the dietetic treatment of disease*.

The study of dietetics is of value to the nurse because *dietotherapy is a very important branch of therapeutics*.

The special bread usually given to diabetics is.....*gluten bread*.

Three vegetables classed as legumes are *peas, beans and lentils*.

Three vegetables classed as tubers are *white and sweet potatoes and artichokes*.

General rules governing the diet in cardiac diseases are *that the food should be tempting, given in small amounts frequently and leave little residue after digestion*.

The gastric juice contains.....2.....enzymes, namely,(a).....*pepsin*, (b).....*rennin*.

The sugar found in milk is called.....*lactose*.

The number of calories contained in an average sized egg is75.

A low protein diet is given in.....*nephritis*.

A condition requiring a high caloric diet is.....*malnutrition*.

The mineral found in eggs is.....*iron*.

The mineral found in spinach is.....*iron*.

Raw milk that passes State inspection is called.....*certified*.

Scurvy will result from lack of.....*water-soluble C*
.....*vitamin*.

Foods are classified according to:

(a) Source, namely.....*animal, vegetable and mineral*.

(b) Chemical composition, namely.....*carbohydrates, proteins, fats*.

(c) Function, namely.....*energy producing, body building*.

The function of mineral matter in food is to.....*enter into the composition of the bones and teeth (calcium) while other minerals (sodium, potassium and magnesium salts) are constituents of the circulatory fluids*.

Three foods rich in iron are.....*liver, eggs, spinach*.

The absorption of food occurs chiefly in the *small intestine*.

The chief food used in the diet for a patient with a gastric ulcer is *milk*.

The process of digestion of starch is as follows:

It is acted upon by the.....*ptyalin*.....in the mouth.

In the stomach by.....*ptyalin (digestion completed)*.

In the intestines by.....*amyllopsin, maltase, lactase, sucrase*.

Three digestive juices found in the intestines are:

(a)*gastric juice*, (b)*pancreatic juice*,

(c)*succus entericus*.

A mixed diet for a normal person is preferable to a meat or vegetable diet because.....*it contains all of the elements necessary to maintain the functions of the body, i.e. fats, proteins, carbohydrates, mineral salts and vitamins*.

Soda should not be added to the water in which vegetables are cooked *because it destroys vitamin C*.

Three points to consider in preparing a menu are.....
(1) *personal idiosyncrasies*, (2) *the best means of stimulating the appetite is to have good, nutritious food, well cooked and*

attractively served, (3) in order to thoroughly satisfy the needs of the body the diet must be varied.

Five chemical elements found in the human body are.....
carbon, nitrogen, oxygen, hydrogen and calcium.

They are supplied to the body by.....*food.*

Carbohydrates and fats differ in food value in that.....
*fats.....supply more heat and energy than.....carbo-
hydrates.*

Two vegetables rich in protein are.....*beans and peas.*

Two mollusks used for foods are.....*oysters and clams.*

Two crustaceans are.....*lobsters and crabs.*

Bread is rendered more digestible by toasting because.....
the starch is partly converted into dextrins.

The recent treatment of anæmia is.....*the liver diet.*

Incomplete protein foods may be made adequate for growth by the use of.....*foods rich in amino acids, as milk and eggs.*

Fat must be restricted in the diet of a patient with disease of the liver.

Five fruits recommended for laxative value are.....
prunes, figs, oranges, rhubarb and apples.

The kinds of food eliminated in treatment of gout are.....
liver, sweetbreads, brain, kidneys.

The disease usually given a carbohydrate-free diet is.....
diabetes.

A substitute for sugar is *saccharin.*

A substitute for starch is *casein.*

Why do some cereals require such long cooking? *Because of their hard cellulose sheath.*

Infants should not have starches in their diet unless pre-digested because *the infant's pancreatic juice is defective in secreting amylpsin.*

Beef tea is best made from the *leanest* cut of beef.

Fricasseeing is a combination of *stewing and sautéing.*

Brazing is a combination of *stewing and baking.*

The diet of a pregnant woman should contain little or no *meats* if the urine contains albumin.

Three articles of food having a high protein content are*meat, cheese and eggs.*

Lettuce contains a good proportion of *cellulose.*

The fuel value of food is computed in.....*calories.*

Foods containing cellulose are valuable in.....*constipation.*

The food constituent most necessary in building tissue is*protein.*

Two articles of food valuable in tuberculosis are.....*milk and eggs.*

The most digestible form in which to serve bread is.....*toasted.*

Changes in the food which take place in the mouth are.....*maceration or softening of hard masses and mixing starch with the ptyalin of saliva which changes insoluble starch to soluble dextrose and dextrin.*

The main food constituents of bread are.....*the vegetable protein known as gluten, with a large amount of wheat starch.*

Sweetbreads are obtained from.....*the thymus glands of the calf, less frequently the pancreas.*

An enzyme of the pancreatic juice digesting protein is called*trypsin.*

The two chief food constituents of eggs are.....*protein and fat.*

Buttermilk contains.....*lactic.....acid.*

Whey is made from—*milk through separation of the solid, or casein.....albumin.*

The process of cooking meat to best retain its juice is.....*roasting.*

When sugars and starches are excluded from a dietary, it is known as.....*carbohydrate free.*

Water freezes at.....*32..... degrees Fahrenheit.*

Water boils at sea level at.....*212.....degrees Fahrenheit.*

Three reasons for cooking food are:*

1. *To make it palatable.*
2. *To make it more digestible.*
3. *To destroy harmful organisms.*

646 STATE BOARD QUESTIONS AND ANSWERS

Absorption is.....*the process by which digested foods are taken from the alimentary tract for utilization.*

Food is made available for the use of the body by three processes known as.....*digestion, absorption and assimilation.*

Heat-producing foods are.....*fats, carbohydrates.*

Drinks made from fruit juices are especially valuable for fever patients as.....*citrus fruit juices prevent acidosis, and acid drinks are most refreshing.*

A perfect food is.....*one which contains protein, fat, carbohydrate, water and inorganic salts and vitamins in proper balance and quantity.*

Tissue-building foods are.....*proteins.*

The relative food value of protein is.....*1 gram in 4 calories.*

The relative food value of fats is.....*1 gram in 9 calories.*

The relative food value of carbohydrate is.....*1 gram in 4 calories.*

The three main classes of vitamins are.....*fat-soluble A, water-soluble B, water-soluble C.*

One food rich in each of these is.....*fresh milk (A), yeast (B), orange juice (C).*

The caloric unit is.....*the amount of heat required to raise the temperature of 1 kilogram of water 1 degree Centigrade.*

SURGICAL NURSING

NAME THE FOLLOWING PROCEDURES

Removal of eyeball.....*enucleation.*

Repair of cervical tear.....*trachelorrhaphy.*

Any opening into the abdominal cavity.....*laporatomy.*

Removal of the gall bladder.....*cholecystectomy.*

Tapping of a body cavity.....*paracentesis.*

Removal of a kidney.....*nephrectomy.*

Repair of a perineal tear.....*perineorrhaphy.*

Formation of an artificial anus.....*colostomy.*

Removal of Fallopian tubes.....*salpingectomy.*

Drainage of gall-bladder.....*cholecystostomy.*

Removal of spleen.....*splenectomy*.

Removal of uterus.....*hysterectomy*.

Removal of part of iris.....*iridectomy*.

Incision of the labia to prevent tears in labor.....*episiotomy*.

Transfer of blood from one person to another.....*transfusion*.

Formation of a fistula between stomach and intestine.....*gastro-enterostomy*.

Drainage of pleural cavity.....*thoracotomy*.

Incision of a bone.....*osteotomy*.

Excision of the prostate gland.....*prostatectomy*.

Removal of the ovaries.....*oöphorectomy*.

(a) Two diseases that would contra-indicate the administration of general anæsthesia are.....*diabetes and acute nephritis*.

(b) The stomach should be empty before operating for the following reasons: *to minimize nausea and vomiting and, if such does occur, to avoid danger of aspirating food particles into lungs*.

Two outstanding serious post-operative conditions which may occur following a thyroidectomy are.....*acute post-operative thyroidism and tetany*.

(a) The chief symptoms of acute appendicitis are.....*abdominal pain, constipation, vomiting, slight fever*.

(b) The symptoms of thrombophlebitis are.....*pain and tenderness in and about the vein, discoloration and œdema*.

Serious symptoms to watch for and report immediately when nursing otitis media are.....*chill, sudden rise in temperature, pain over the mastoid, headache, vomiting, stiffness of the neck, drowsiness or delirium*.

The important factors to be remembered in the post-operative care of the urinary tract are.....*to note and record the amount and character of urine voided, to prevent suppression, watch for unfavorable symptoms, such as: headache, dizziness, nausea and vomiting, dimness of vision, restlessness or unconsciousness*.

OBSTETRICS AND GYNÆCOLOGY

The presumptive signs of pregnancy are *cessation of menses, breast changes, morning sickness and quickening.*

A foetus can live outside of the body of the mother at *seven months.*

Tubal pregnancy is an extrauterine pregnancy. The danger in this condition is *tubal rupture and hæmorrhage.*

Headache, dizziness, apprehension, depression, nausea and vomiting during the second half of pregnancy are symptoms of *eclamsia.*

Inherited diseases are diseases *which come from one's ancestors.* Some diseases which may be inherited are *syphilis, and insanity.*

A congenital injury is an injury *existing at or before birth.*

Pernicious vomiting of pregnancy usually occurs during *the first three months.*

Two cases of ante-partum hæmorrhage are *placenta prævia and premature separation of the normally implanted placenta.*

The routine care of the perineum after delivery and during the puerperium is *thorough bathing from above downward with green soap and water followed by flushing with an antiseptic solution such as bichlorid of mercury 1 : 2000 or ½% lysol solution. This procedure should be carried out after exchanging vulva pads and after urination and defecation.*

The baby is put to the breast for the first time between *3 and 4 hours after birth.*

A mother should not nurse her baby if she has *tuberculosis.*

Vaginal bleeding post menopause suggests *cancer of the uterus.*

Give three essentials in the pre-operative care of a gynæcological patient.

(1) *Lower abdomen, pubic region and vulva should be scrubbed and shaven.*

(2) *Bowels should be emptied by cleansing enema.*

(3) *Patient must be void.*

During the first four months of its development, the ovum is called an *embryo*; after four months it is called a *foetus.*

The chief location of puerperal thrombosis and phlebitis is the *veins of the pelvis, thigh and leg.*

When the impregnated ovum remains in the tubes or escapes into the abdomen or pelvis, the pregnancy is known as an *extra-uterine pregnancy.*

If the first day of the last menstruation was June 1, 1927, the expected time of confinement would be *March 8, 1928*.

The two *fontanelles* in a baby's head are very important structures obstetrically.

There are *three degrees* of lacerations.

The two most common disorders of pregnancy are *nausea and vomiting* and *swollen feet*.

The application of 2 per cent. silver nitrate solution to the eyes of the newborn followed by normal salt solution is known as *the Crede method*.

Interruption of pregnancy after the 28th week and before the 38th week is called *miscarriage or premature delivery*.

The object of the nurse's care of the breasts is to prevent *mastitis* and to establish an adequate food supply for the infant.

After birth the increasing amount of pressure of blood in the left auricle of the infant causes the closure of the *foramen ovale*.

The operation of turning of the foetus in the uterus is called *version*.

The failure of the organs to return to normal during the puerperal period is known as *involution*.

ETHICS AND HISTORY OF NURSING

Two National nursing organizations are *American Nurses' Association* and *National League of Nursing Education*.

Of the ancient civilization the *Jews* ranked the highest in sanitary excellence.

The Red Cross organization was introduced into America by *Clara Barton*. The president of the American Red Cross is the *President of the United States*.

The first hospital in the United States was founded in the year 1658 on Manhattan Island and later was known as *Bellvue Hospital*.

Florence Nightingale was the founder of modern nursing; she raised nursing from the plane of domestic to the plane of a *learned profession*.

Teachers College, Columbia University, is situated in *New York City*.

The official magazine of the American Nurses' Association is *The American Journal of Nursing*.

The founder of the Sisters of Charity was *Vincent de Paul*.

B. TRUE—FALSE TYPE

ANATOMY AND PHYSIOLOGY

Write True or False before each question.

True. The foramen ovale is an opening between the two auricles.

False. There are five cervical vertebræ.

True. Lacteals are vessels carrying lymph.

True. The mesentery attaches part of the intestine to the posterior wall of the abdomen.

True. The systole is the contraction of the heart.

True. Myocardium is the lining of the heart.

True. The functions of the cerebellum are maintenance of equilibrium and coördination of the movements.

True. The structure of the skin consists of three distinct layers.

MATERIA MEDICA

True. Insulin enables the body to utilize sugars.

True. Calomel should be followed by a saline cathartic.

False. Arsphenamine is usually given by mouth.

False. Atropine is a respiratory depressant.

True. There is a hyposecretion of hydrochloric acid in cases of pernicious anæmia.

True. Caffeine is a diuretic.

True. One of the first signs of salicylate overdosage is ringing in the ears.

True. Pituitrin is used during labor.

True. The dose of oleum tiglii is one or two minims.

True. Urotropine is a urinary antiseptic.

BACTERIOLOGY AND HYGIENE

True. A bacterial vaccine is a suspension of dead bacteria in salt solution.

True. The presence of bacteria in the body stimulates it to produce protective substances.

False. Spirochæta pallida is the organism which causes gonorrhœa.

True. Natural immunity is the resistance to certain diseases possessed by certain species of animals.

True. Transmission of infection usually occurs by direct contact with an individual having the disease.

True. Attenuate is to reduce in virulence.

True. Plasma is the fluid part of the blood including the constituents capable of clotting.

True. Toxins are the poisonous products of bacterial life.

False. Typhoid bacilli cannot live in a particle of fæces over the winter.

False. Typhoid is an air-borne disease.

GENERAL NURSING

True. Communicable diseases are conveyed from one person to another by means of body secretions.

False. In a diabetic diet well balanced quantities of fat and protein are given to take the place of carbohydrates which are slightly reduced.

True. The limit of tolerance for a drug is reached when the beneficial effects, if any, of the drug have reached their maximum, and a toxic action has begun to assert itself.

False. Cerebro-spinal fever may cause paresis, gumma of the brain.

True. All fevers may be placed under three heads, continued, remittent and intermittent.

False. The exciting cause of smallpox is known to be a streptococcus bacteria.

True. The most important step in the control of smallpox is isolation.

True. Broncho-pneumonia is a very frequent complication of whooping cough.

True. The prognosis of diphtheria depends upon the early use of antitoxin.

False. The main danger of the spread of scarlet fever is in the scales from the skin.

True. Lobar pneumonia is an acute infectious fever.

True. Toxæmia is a morbid condition characterized by the presence of toxins in the blood.

True. The common name for Barbitonum is veronal.

False. Thyroxin is usually obtained from the stomach glands of the pig.

True. The Islands of Langerhans are found in the pancreas.

True. Epidemic meningitis is caused by the diplococcus of Weischelbaum.

False. Mary Roberts Rhinehart was the discoverer of the Dick test.

True. Rickets is a disease of the mineral metabolism.

True. "Senile psychosis" means a mental disorder associated with senility.

False. The "strawberry" tongue occurs in typhoid and other septic fevers.

PÆDIATRICS

False. Cow's milk may be modified to contain the same percentage of constituents as mother's milk and is an equally good food for infants.

True. If possible "Inspected milk" should be obtained for infant feeding.

False. In modification of cow's milk for infant feeding the percentage of sugar and fats is increased and the protein reduced.

False. An infant obtains sufficient water in its feedings.

True. If stools show evidence of mucus, feedings should be limited.

False. Talipes is a deformity of the mouth.

False. Myocarditis is inflammation of the covering of the heart.

True. Intussusception is found most often in children less than 2 years old.

False. Stomatitis is inflammation of the stomach.

True. Tonsils are normally large in infants.

True. Enuresis is incontinence of urine.

False. Acidosis is a disease.

True. Pediculosis is a parasitic disease.

True. Sunlight is the most important factor in the treatment of rickets.

False. Atelectasis is the perfect expansion of the lungs at birth.

True. A premature infant is often fed by gavage.

True. The average normal infant may be given whole milk at ten months.

True. An infant should receive a dram or more water between every two feedings.

True. Orange juice should be diluted and given after the first month.

False. Milk is pasteurized by boiling.

True. Sunlight is the most important factor in the treatment of rickets.

True. It is necessary for a baby to cry as soon as it is born to prevent atelectasis.

True. Crede's method is the prophylactic treatment for ophthalmia neonatorum.

False. The proper care of a baby's mouth consists in washing with boric acid solution before and after nursing.

False. Complemental feeding is the substitution of a bottle for breast feeding.

True. Proper hygiene and regularity of habits are essential for normal growth and development.

True. When a child is born the deciduous teeth are completely formed.

True. Marasmus is due to chronic malnutrition.

True. A symptom of acute indigestion in children is vomiting.

False. Head sweating, large abdomen, soft bones and lack of muscle tone are the symptoms of scurvy.

DIETETICS

True. A child suffering from scurvy should be fed tomato juice.

True. A typhoid fever patient should have a high caloric diet.

True. A diabetic diet should be relatively high in protein.

True. Fluids should be restricted in diseases of the heart.

False. Fluids should be increased for gastric ulcer patients.

False. Tea should be made as a decoction.

True. The excessive use of eggs may cause biliousness.

OBSTETRICS

True. The uterus occupies the middle of the pelvis and is suspended from the walls of the pelvis.

False. If a pregnant woman is in apparent good health, there is no reason for her to have medical attention the first four or five months.

False. Should menstruation occur, the mother must discontinue the nursing of her baby.

False. If the baby's eyes are treated with prophylactic drops at birth, further care is unnecessary.

654 STATE BOARD QUESTIONS AND ANSWERS

False. A mother with tuberculosis should nurse her baby.

False. A baby gains steadily from first day of birth.

False. Ergot should be given at the end of the second stage of labor.

False. If there is infection in the vaginal canal at labor, the ruptured bag of waters tends to prevent the infection from entering the uterus or the baby's eyes.

True. The stump of the cord separates in two ways, by dry gangrene and by moist gangrene.

True. The perineum is the body between the vagina and the anus.

False. Hydrocephalus is a disease of the placenta.

False. Ovulation is the only function of the ovary.

False. A patient threatened with abortion should have plenty of exercise in the open air.

ETHICS AND HISTORY OF NURSING

False. Unprofessional conduct reflects more on the individual nurse than on her profession.

False. If a nurse has engaged herself for a certain date and later is offered a more attractive case, she is justified in accepting the latter.

True. It is unethical for a nurse to discuss the merits of a physician who is not the attending physician, with a patient under her care.

True. If a nurse were called on a case by a doctor who she knew had performed an unnecessary abortion, she should refuse the case.

True. The religion of a nation and the status of women have always greatly influenced nursing growth.

False. The Civil War retarded the progress of nursing in the United States.

True. The first real university course for nurses was organized at Teachers College, Columbia University.

C. SELECTION TYPE

(The words necessary to be selected to make a correct statement are indicated in *italics*.)

ANATOMY AND PHYSIOLOGY

The gastrocnemius is a *striated muscle, located in the lower extremities*.

The peritoneum is a mucous membrane, *lines the abdominal cavity*, covers the viscera.

Muscles of expression are *obicularis oris*, occipital.

The mitral valve consists of *fibrous flaps* and *lies between the left ventricle and left auricle*.

The coronary arteries are *two in number*, are *branches of the aorta*, form part of the Circle of Willis.

The iris *determines the color of the eye*, *regulates the amount of light entering the eye*.

The medulla oblongata is *oblong in shape*, white matter in interior, *contains respiratory centre*.

An ureter is an *excretory duct*, extends from the bladder to the meatus, *carries urine*.

Some abnormal constituents of the urine are *albumin, glucose, casts, pus*, creatinine.

Bile is *secreted by the liver*, *stored in the gall-bladder*, discharged into the stomach, *helps digest fats*.

Rennin is an *enzyme found in the gastric juice*, acts on carbohydrates.

The *pancreas* is *partially a ductless gland*, is *hammer shaped*, lies above the stomach.

The vocal cords are *strong ligaments*, are across the trachea, *function to produce the voice*.

Heat is produced *by food*, by the respiratory centre, by the *motor centre*.

The kidneys are a part of the respiratory, alimentary, *excretory* system.

Sight is controlled by the *optic*, auditory, olfactory nerves.

The ankle is a ball and socket, pivot, *hinge joint*.

The *trapezius* is a *diamond shaped muscle* covering the anterior portion of the chest.

MATERIA MEDICA AND THERAPEUTICS

A respiratory depressant is a drug which makes the breathing: deeper, *slower*.

Salvarsan is a *stronger*, weaker, drug than Neo-salvarsan.

Insulin shock is due to hyperglycemia, *hypoglycemia*.

Ammonium chloride is a useful diuretic, antiseptic, *expectorant*, cathartic.

Compound tincture of benzoin is used in diseases of the *lungs*, heart, stomach.

656 STATE BOARD QUESTIONS AND ANSWERS

Digitalis is a saline, *circulatory stimulant, diuretic*.

The iodides are indicated in the first, second, *third stage* of syphilis.

Antitoxin, toxin-antitoxin, is used in treating diphtheria.

The specific treatment for myxedema is *thyroid extract*, pituitrin, insulin.

Typhoid vaccine, cures, *prevents*, typhoid fever.

BACTERIOLOGY AND HYGIENE

The *Schick Test*, Dick Test is given to determine the immunity to diphtheria.

Malaria, scarlet fever, pneumonia is an insect-borne disease.

Asepsis means the *absence*, presence of living bacteria.

Protozoa, opsonins, are minute unicellular animal organisms closely allied to bacteria, but differing from them in their mode of reproduction.

MEDICAL NURSING AND MENTAL DISEASES

The chief aims of the nursing care in infectious diseases are *control epidemics, comfort of the patient*, keep the temperature down.

Paranoia is characterized by *well systemized delusions of either grandiose or of a persecutory nature*, is meant a splitting of personality or a disorder of the sensorium characterized by hallucinations, dissociations and feelings of influence.

Sources of danger in an epileptic convulsion are *strangulation, aspiration*, asymmetry of face, exophthalmos.

An hallucination is a *false sense impression*, is a false belief.

When the blood calcium is reduced one-half or more without suitable diminution of the phosphorous rickets may occur, *tetany* may occur.

Special qualifications which a nurse for nervous patients should possess are *tact, gentleness, optimism*, vanity and curiosity.

A patient in a deep stupor should receive good nursing care because the *circulation is poor, patient is liable to trophic skin lesions*, they have poor judgment and are liable to injure themselves.

Symptoms which may follow lumbar puncture are *headache, syncope, anorexia, anasarca, rapid pulse*.

The general dietary rule for epileptics is *easily digested food in moderate amounts*, salt free diet with fluids limited.

The function of the cerebellum is believed to *control the neuromuscular machinery*, is the centre for interpretation of sensations.

Incubation period is the period of eruption, *the period between the infection and the manifestation of the disease.*

The first underlying principle of importance in giving a hot pack in eclampsia is *safety*, comfort, economy, therapeutic effect, finished appearance.

The head of the bed is elevated in pelvic operative cases to control hæmorrhage, *to promote abdominal and pelvic drainage.*

The object in emergency or first-aid treatment of burns is to *exclude the air*, to avoid the formation of a blister.

The chief essential of good nursing in all diseases that involve the vascular system is *supportive treatment*, exercise, force fluids.

Secondary anæmia may be caused by an abnormal condition of bone marrow, *by acute loss of blood.*

The symptoms of angina pectoris are flushed face, chills, *paroxysmal thoracic pain and suffocation.*

Thrombosis and embolism occur most frequently following *parturition*, pneumonia.

The prophylaxis of thrombosis and embolism is *change patient's position frequently*, massage patient's legs frequently.

Aneurysm is a sac formed by the localized dilatation of the wall of an artery frequently caused by *arteriosclerosis*, acute medical diseases.

Mitral insufficiency is due to defective closure of the valve between the right auricle and ventricle, *between the left auricle and ventricle.*

By stenosis is meant *narrowing*, dilatation, of a valve or blood-vessel.

The most important part of the care of a pneumonia case is *good nursing*, keeping the patient well stimulated.

Cardiac compensation is the power of the heart to adjust itself to *its disability*, the collapse of the patient.

Prophylaxis in pneumonia depends upon *strict isolation of the patient*, the use of pneumococcus vaccine.

Symptoms of peptic ulcer are *hyperacidity and tenderness over epigastrium*, dyspnœa, flushed cheeks.

The common causes of acute gastritis are *indigestible foods*, overeating, drinking copious amounts of water with meals.

658 STATE BOARD QUESTIONS AND ANSWERS

The most common disease of the intestines is diarrhoea, *constipation*.

Acute intestinal obstruction is due to peptic ulcers, *intussusception*.

Common causes of chronic intestinal obstruction are syphilis, tuberculosis, *intussusception*, *post-operative adhesions*.

The chief danger of an embolism is the *occlusion of a terminal blood-vessel*, phlebitis.

PÆDIATRICS

(Liquid, *solid* foods) are commonly used as treatment for a child who has swallowed a pin or tack.

The natural food for an infant is (cow's milk, *breast milk*).

The protein of human milk is (*lower*, higher,) than that of cow's milk.

In the treatment of pneumonia a nurse should especially watch the (*respiration*, color, rose spots on the abdomen and hydrocephalus).

To prevent scurvy and rickets, feedings of boiled milk should be accompanied by (lime water, *fruit* and vegetable juices).

A desirable quality in women who nurse children is (strict discipline, *patience*).

Acidosis is a condition in which the normal alkalinity of the blood is (*increased*, decreased).

The proper temperature of the bath for a baby should be (90° F. to 95° F.; 110° F. to 115° F.; 70° F. to 80° F.)

Two important points to remember when nursing patients with nephritis are (*avoid chilling*; give a diet with: plenty of proteins; *plenty of fluids*; plenty of acid foods; *as they stimulate the kidneys*).

Infant mortality is highest (*during the summer months*; during the winter months).

The average capacity of an infant's stomach at birth is (*one ounce*; two ounces).

Modification of milk is (*the dilution of cow's milk with water or cereal gruels and sugar*; is pasteurizing the milk by heating it to 60-70 degrees F. then quickly cooling it).

A child with a tendency toward marasmus should be (*overfed*: given plenty of cream).

True croup is (spasmodic catarrhal laryngitis; is *laryngeal diphtheria*).

DIETETICS

A menu for a light diet might be *soup, scraped rare beefsteak, carrots, baked potatoes* and mince pie.

An example of carbohydrates is: *Cereals, meat, nuts, cream, carrots, and oranges.*

Some valuable substitutes for meat are *nuts, cheese, cereals.*

The diet of a child with rickets should include *cod liver oil* and buttermilk.

Colitis may result from *overfeeding, underfeeding.*

The diet of a child in the acute stages of scarlet fever should contain *milk, eggs* and meat broths.

In cases of nephritis a *salt free, high protein diet*, with restricted fluids should be used.

A good luncheon for a diabetic might be composed of *cream of tomato soup, crackers, asparagus, fish* and rice pudding.

A diet for the treatment of colitis might contain *cereals, fruit, toast, milk* and celery.

A soft diet should contain *soups, eggs, milk, toast, cereals, chicken, custard.*

OBSTETRICS

The nurse will know when labor begins by the *regularity of uterine contractions*, by the lightening.

Severe cases of ophthalmia neonatorum which lead to blindness are due to *Neisserian infection, staphylococcus infection.*

The term presentation has reference to the relation the presenting part has to the pelvis, to *the part the fœtus presents first at the internal os.*

The nurse's first responsibility during the first twelve hours of the puerperium is to *guard the uterus for hæmorrhage*, relieve pain from afterpains and secure sleep.

Pituitrin should not be used *before completing dilatation of the cervix*, before the pains are regular.

Podalic version means *the feet are brought over the inlet*, head is brought over the inlet.

Procedures you would employ in the nursing care of a post partum hæmorrhage are: *changing pads, massage of uterus, intrauterine douche, external heat, elevate head of bed.*

The fœtus is entirely surrounded by Wharton's jelly, Vernix caseosa, *amniotic fluid.*

Mastitis is an infection of the uterus, *the breasts*, the vagina.

The first intestinal discharge of the newborn is called colostrum, amniotic fluid, *meconium*.

Three emergencies which should always be prepared for are: (1) *asphyxia of the newborn*, (2) *post partum hemorrhage*, (3) *involution*, (4) *shock*.

Icterus neonatorum is not a serious condition of the newborn, affects seriously the general health of the baby.

ETHICS AND HISTORY OF NURSING

As nurses we believe the most important work is *the care of the sick*, the teaching of health.

The first nursing school in the United States was organized in the *New England Hospital for Women and Children*, the Bellvue Hospital.

America's first trained nurse was Dorothea Dix, Louise Schuyler, *Linda Richards*.

One of the most important questions before the nurses of today is the problem of *uniform state regulation of nursing standards*, is the financial remuneration of nurses.

D. NUMERICAL SELECTION TYPE

Directions: Place the Number of the Word Which Makes the Statement True in the Blank Space

PRACTICAL, SURGICAL AND MEDICAL NURSING

- | | |
|-------------------------|---|
| 1. Odors | The contraction of the heart is known as the 7. # |
| 2. Pathogenic organisms | The period of relaxation of the heart is termed the 6. |
| 3. Femoral phlebitis | An accumulation of air or gas in the pleural cavity is called 8. |
| 4. Medical nursing | 9 is prescribed in case of dehydration. |
| 5. Sinapism | 14 is associated with sudden nervous shock. |
| 6. Diastole | When fever remains above normal with considerable differences between the highest and lowest point it is known as 13. |
| 7. Systole | Complete rest is the first essential in the treatment of 15. |

Numbers in italics are omitted in the original statements.

8. Pneumothorax 10 consists in the aspiration of the chest.
9. Enteroclysis 5 is used to relieve congestion in pleurisy and pneumonia.
10. Thoracentesis 4 offers the greatest scope for mastering the difficult art and science of nursing.
11. Manual dext- 3 may be a complication following
 erity operations on the pelvis.
12. Nephritis Sepsis is the condition of being infected with 2.
13. Remittent 1 may be overcome by careful attention to the disposal of all body excretions, and by proper sanitation.
14. Collapse 11 is essential in the skillful handling of the patient with the least discomfort.
15. Tympanites 17 is a malignant tumor made up of connective tissue enclosing epithelial cells.
16. Anuria 19 is lack or loss of appetite for food.
17. Carcinoma The treatment for 12 is avoid all exposure, forced fluids, hot colon irrigations or proctoclysis, and hot packs.
18. Dehydration Nausea and vomiting continued for some time after an operation, excessive thirst and dry hot skin are symptoms of 18.
19. Anorexia Frequent or long continued use of morphine in post-operative cases may be a contributing cause of 16.

OBSTETRICS

1. Asepsis The process by which the 5 are expelled, is called labor.
2. Local changes The 7 involve the entire body.
3. Ruptured The 2 involve the genitals.
 uterus
4. Multipara Sometimes an 9 is done to prevent tearing the perineum.
5. Secundines The chief duty of the nurse during labor is to maintain 1.
6. Meconium The symptoms of threatened 3 are very strong and frequent pains with no advancement of the child.

662 STATE BOARD QUESTIONS AND ANSWERS

- | | |
|--------------------|---|
| 7. General changes | One of the signs of breech presentation is the appearance of 6 in the vaginal discharge. |
| 8. Vernix caseosa | If the 8 is not carefully removed, it may cause irritation in the folds of the baby's skin. |
| 9. Episotomy | 11 changes occur in the genitalia during the puerperium. |
| 10. Bag of waters | 12 changes occur in the breasts during the puerperium. |
| 11. Retrogressive | The 10 is formed by the uterine contractions and the function is to dilate the cervix. |
| 12. Progressive | A woman who has had more than one child is called a 4. |

ETHICS AND HISTORY OF NURSING

- | | |
|-------------------|---|
| 1. Sister Helen | The army nursing service during the late war was organized by 2 who later took over the Red Cross army nursing. |
| 2. Annie Goodrich | The Henry Street settlement work was organized by 3. |
| 3. Lilian D. Wald | The first Superintendent of Nurses at Bellvue Hospital was 1. |

INDEX

- Abbreviations, 1
 - English equivalents of, 2
 - Latin, 1
 - pharmaceutical, 1
 - prescriptions, 1, 2
- Abdomen, muscles of, 78
 - nine divisions of, 89
- Abdominal cavity, organs of, 90
 - opening into, procedure, 646
 - section, bladder in, 329
 - strain on muscle, relief of, 334
 - wound dressing, 320
- Abdominal sponges, 330
 - method of counting, 330
- Abduction of limbs, definition, 132
- Abortion, 397
 - threatened, 403
- Abscess, 240, 309
 - following hypodermic injections, 240
 - local, point of entrance, 187
- Absorbable ligature, definition, 355
- Absorption, 506
 - definition of, 138
- Accessory organs of vision, 104
- Accident, post-operative, 343
- Accommodation, 102, 103
 - disorders of, 103
- Acetabulum, 75
- Acetanilid, definition of, 42
 - in proprietaries, 42
 - toxicity of, 42
- Acetone in urine, 142
- Acid, definition, 576
 - hydrochloric, actions and uses, 15
- Acids, characteristics of, 579
 - administering, 24
 - inorganic, 15
 - mineral, 15
 - organic, 15
 - plant, 15
- Acidosis, definition, 437, 658
 - dietetic treatment, 516
- Acidum acetylsalicylicum, see Aspirin
- Aconite, action and uses, 12, 36
- Act, Harrison, 37
- Actinotherapy, 203
- Action, reflex, 620
- Active movements, 242
 - principle, of a drug, 634
- Acute alcoholism, 264
- Acute interior poliomyelitis, 188
- Acute meningitis, bacteria cause, 175
- Acute peritonitis, 341
- Acute poliomyelitis and epidemic meningitis, 296
- Acute rheumatic fever, 255
- "Adam's apple," 65
- Adaptability, 556
- Adduction of limbs, definition of, 132
- Adenitis, 200
- Adenoids, 469
 - operation for, 469
 - removal, benefit of, 470
 - symptoms of, 469
- Adjustment, definition, 589
- Administration of drugs, 21
 - arsenic, 24
 - croton oil, 17
 - iron, 24
 - phenacetin, 25
 - potassium iodide, 24
 - quinine, 25
 - rules, 22
 - salol, 25
- Adolescence, 200
- Adrenalin, 12, 39
- Adrenalin, derived from, 636
 - in anaesthesia collapse, 326
- Adrenals, 90
- Adult bladder, average capacity of, 144
- Aërobic, definition of, 180
- After-pains, 413
- Agalactia, definition, 395
- Air, alveolar, 117
 - amount required hourly, 172
 - chemical constituents of, 574
 - complemental, 117
 - composition of pure, 172
 - contamination in sick room, 638
 - expired, 120
 - characteristics, 173
 - danger to health, 171
 - fresh, 117
 - impure, in the sick room, 119
 - night, 172
 - of sick room contaminated, 247
 - how to judge, 173
 - temperature, 172
 - pure, 120, 172
 - required for child, 172
 - reserve, 117

- Air—(*Continued*)
 residual, 117
 space, adult, 119
 sleeping room, minimum requirements, 173
 tidal, 117
 Air-cells of lung, 82
 Albumin, 493
 in foods, 493
 in urine, test for, 581, 641
 lemon, method of preparing, 523
 to make a cup, 522
 water, preparation of, 464
 Albuminuria, definition of, 641
 Alcohol, 14
 denatured, 581
 solution, preparations of, 56
 Alcohol, ethyl, 581
 chemistry formula, 581
 uses, 581
 Alcohol, wood, 581
 chemistry formula, 581
 uses, 581
 Alcoholic beverages, danger of, 161
 Alcoholism, appearance of, 264, 265
 Alexins, 195
 Alimentary canal, description of, 93
 divisions of, 93
 effect of morphine on, 12
 subdivisions of, 92
 tract, 621
 divisions of, 623
 Alimentation, organs of, 113
 Alkali, definition of, 576
 Alkaloid, from coca leaves, 44
 Alkaloids, definition, 9
 from belladonna, 40
 from cinchona, 43
 from coffee, 6
 from opium, 9
 names of, 9
 Alkaloids and alkalis, difference, 9
 Aloe, 33
 dosage, 33
 mode of action, 33
 Aloin, dose, 34
 Alterative, definition, 5
 example, 5
 Alternatives, 6
 Alum, antidote for, 45
 Amenorrhoea, causes of, 381
 definition of, 375
 American Child Health Association, 162
 American Nurse's Association, 538,
 559, 561
 official magazine, 649
 American Red Cross, national headquarters, 559
 Amino-acids, 116
 Aminoic fluid, 396
 Amitosis, 101
 Ammonia water and tincture of iodine, 575
 Ammonium carbonate, 12
 Ammonium chloride, 655
 dosage and effect, 18
 Amoebic dysentery, 190
 Amoeboid movement, 136
 Amputation of breast, 341
 nursing care of, 335
 Amylopsin, 115
 Anabolism, 130
 Anaemia, 487
 definition, 487
 foods in, 507
 pernicious, dietary treatment, 255
 hyposecretion of hydrochloric acid, 650
 primary and secondary difference, 255
 recent treatment, 644
 rules for living, 255
 secondary, cause of, 657
 types, 255
 Anaesthesia, 323
 by whom discovered, 311
 care of the metal inhaler, 323
 essentials for, 323
 ether or chloroform, collapse from, 32, 326
 general, 323, 324, 325
 general care of a patient, 323-324
 local, 325
 urine, necessity for examination of, 145
 vomiting after, to stop, 324
 Anaesthetics, definition, 12, 32
 examples of, 32
 general, 32, 636
 precautions during, 325
 reassurance before, 325
 sensations before, 325
 local, 325, 635
 methods of use, 32
 see also chloroform, ether, cocaine, etc.
 Anastomosis, 312, 313
 Anatomy, 65, 81, 101
 and physiology, 619, 650, 654
 difference between, 135
 of female generative organs, 371

- Anatomy, necessary to nurses' education, 101
- Aneurism, definition, 205
- Aneurysm, 657
- Angina pectoris, symptoms, 657
- Ankle, 655
- Anodyne, definition, 4
and hypnotic, difference between, 7
Hoffman's, 7
- Anorexia, 201, 661
- Anthelmintic, definition, 5
example, 5
- Anthrax, bacteria cause, 175
- Antibodies, definition, 179
- Antidote, chemical, 46
for alum, 45
for bichloride of mercury, 47
for carbolic acid, 579
for hydrochloric acid, 45
for silver nitrate, 47
for sodium hydroxide, 579
for sulphuric acid, 47
for tincture of iodine, 47
physiological, 46
- Antidotes, definition, 5
- Antipyretic, definition, 5
- Antipyretics, phenacetine and acetanilid as, 12
- Antisepsis, 311, 314
- Antiseptic, 315
definition, 5
for mucous membrane, 637
urinary, example, 637
average dose, 637
washes, drugs used, 25
- Antispasmodic, definition, 5
- Antitoxin, 194, 195, 637
diphtheria, how obtained, 193, 194, 630
method of injection, 278
usual dose of, 278
tetanus, 194
theory administered upon, 189
- Anuria, 641
causes of, 661
definition, 145
- Anus, artificial, formation of, 646
fissure of, 310
prolapse of, 341
- Aorta, 78, 81, 86, 120
abdominal, 120
arch of, 120
bronchial, branches of, 120
carotid, branch of, 121
celiac, branches of, 120
coronary, branches of, 120
gastric, branches of, 120
- Aorta—(*Continued*)
hepatic, branches of, 120
innominate, branches of, 120
intercostal, branches of, 120
mediastinal, branches of, 120
oesophageal, branches of, 120
pericardial, branches of, 120
splenic, branches of, 120
subclavian, branches of, 120
superior mesenteric, branches of, 120
thoracic, 120
- Aperient, definition, 5
example of, 5
- Aphasia, definition of, 202, 596
- Apnoea, 135
- Apomorphine, 12, 40
as an emetic, 12
as an expectorant, 40
dosage, 17
uses of, 17, 40
- Aponeurosis, 77
- Apoplectic stroke, importance of not moving, 604
treatment, 604
- Apoplexy, 264, 266
and syncope, difference between, 265, 266
appearance of, 264
disease, confused with, 266
first aid treatment, 265
precautions in nursing, 265
symptoms, 606
- Appendectomy, instruments in, 330
- Appendicitis, 116, 347
acute symptoms, 647
- Appendix, ruptured, symptoms of, 347
vermiform, 94
- Apple, caloric value, 494
- Arachnoid, 97
- Argyrol, 40
- Arm, bones of, 69
arteries of, 87
- Arsenic, action of, 12
acute poisonous symptoms, 40
cumulative symptoms, 20
overdosage, symptoms of, 21, 45
pretoxic, symptoms, 40
therapeutic uses, 40
when and how administered, 24
- Arsenite of potassium, see Fowler's solution
- Arsphenamine, see salvarsan
- Arterial circulation, left ventricle to right wrist, 86

- Arteries, 86
 and veins, blood-vessels connecting, 86
 difference in structure of, 122
 carotid, 87
 coronary, 655
 femoral, 86, 87
 function of, 119
 large, 84
 of head, large, 84
 of the forearm, 87
 radial, 86, 87
 supplying heart, 622
 temporal, 86, 87
 thyroid, 87
 upper extremities, large, 84
 where pulse is taken, 86
- Arterioles, 120
- Arteriosclerosis, 201, 254
 with diabetes, prevention of, 261
- Artery, brachial, 86
 carotid, location of, 624
 facial, 86
 pulmonary, 86, 120
 radial, location of, 624
- Arthritis, 256
 deformans, 256
- Articulations of skeleton, 66
 see also Joint articulations, joints
- Asepsis, 314, 315, 656
 and antisepsis, 315
 breaks in, 316
- Aseptic technic, 316
- Asphyxia, 312
 neonatorum, 422
- Aspiration, 308
- Aspirin, dosage of, 19
- Assimilation, definition, 138, 492
- Astigmatism, 103
- Astragalus, 66
- Astringent, 8, 12
 intestinal, 25
- Atelectasis, definition, 205, 437
- Atlas, location, 70
- Atom, 569
- Atomic symbol, 569
 theory, 576
- Atophan, average dose, 634
- Atrophy, definition, 203
- Atropine, 40, 650
 action of, 14
 on the eye, 13
 fractional dosage, 30, 31
 minimum and maximum dosage, 19
 physiologic action, 14
- Atropine—(*Continued*)
 sulphate, dosage of, 28
 effect on pupil, 14
 toxic symptoms, 47
- Atropine sulphate, dose, 17
 with morphine, 39
- Attenuate, definition, 651
- Auditory nerve, 96, 100
- Auditory ossicles, 100
- Auricle, left, 83
 right, 93
- Autoclave, definition, 197
- Autogenous vaccine, 194
- Auto-infection, 206
- Auto-intoxication, 206
- Avogadro's Law, 571
- Axis, location, 70
- Babies, artificially fed, digestive disorders, 455
 best food for, 441
 bottle-fed, essentials in caring for, 443
- Baby, bottle feeding of, 443
 breast fed and rickets, 457
 when put to, 648
 proper diet, 444
 stools, 422
 temperature of bath for, 460
 to clean mouth of, 463
 what age weaned, 441
- Bacilli, 176
 tubercle, effect of prolonged sunlight on, 197
- Bacillus, diphtheria, 640
 Klebs-Loeffler, 182
 membrane attacking, 183
 of Bordet and Gengou, 639
 of Eberth, 182
 of Koch, 182
 of Neisser, 182
 of Weischelbaum, 182
 tetanus, 640
 precaution, 641
 shape of, 641
- Back, largest muscle of, 77
- Bacon, to cook and serve, 515
- Bacteria, 174, 176
 acid-fast, 638
 aerobic, 639
 anaerobic, 639
 and acute abscesses, 181
 and boils, 181
 and felons, 181
 cultivation of, 176
 culture media, solid, 180
 cultures, special precautions, 180

- Bacteria—(Continued)**
 destruction of, 638
 disease-producing, 178
 diseases caused by, 175
 dried, 175
 facultative, 639
 fate of, 182
 Gram-negative, 175
 positive, 175
 groups of, 176
 groups, disease associated with, 152, 176
 growth of, 176
 hanging drop preparation, 175
 harmful, 184
 how distinguished, 178
 how find way into milk, 168
 in hospital, 188
 kingdom belonging to, 176
 methods of studying, 177
 motile, 182
 non-pathogenic, 178
 of acute meningitis, 175
 of anthrax, 175
 of erysipelas, 175
 of gonorrhoea, 175
 of pneumonia, 175
 of syphilis, 175
 of tonsillitis, 175
 of tuberculosis, 175
 of typhoid, 175
 on the skin after surgical operations, 180
 pathogenic, 178, 638
 conditions favorable to the growth, 179, 183
 found in water, 639
 growth, 179, 183
 poisonous products of, 181
 putrefactive, 182
 pyogenic, 177
 rapidity produced, 177
 reproduction of, 177
 requisites for growth of, 638
 staining, Gram's stain, 175
 Wright's stain, 176
 substances antagonistic toward, 195
 under the microscope, 175
 work done by, 181
- Bacterial diagnosis, diseases necessary in, 185**
- Bacteriology, 175**
 and hygiene, 155, 650, 656
 in education of the nurse, 178
 in nurse's relation to, 178
 in nurse's work, 316
- Bacteriolysins, 178**
- Bacterium, acid-fast, 638**
 example of, 638
- Bacterium and parasite, difference between, 182**
- Bag, hot-water, 238**
- Baking, 495**
 local, 242
- Ball-and-socket joint, 75**
- Bandage, spiral reverse, 319**
- Bandages, 319**
 and dressings, 319
 applying, 319
- Bandaging, 319**
 turns used in, 319
- Barbital, 634**
 method of administration, 634
- Barbitalum, see Veronal**
- Barbitonum, common name, 651**
- Barium sulphate, danger in administering, 47, 631**
- Barley water, 504**
- Bartholin's glands, 371**
- Barton, Clara, 560**
- Basal ganglia, 97**
- Basal metabolic rate, 252**
 how determined, 252
- Basal metabolism, definition, 204, 642**
 test, 252
 preparation for, 252
- Basedow's disease, 259**
- Bases, characteristics of, 579**
- Basins and pitchers, to disinfect, 319**
- Bath, bed, 224**
 how given, 224
 cold tub, for fever, 140, 228
 reaction, in normal persons, 140
 hot air, 235
 for infant, 420, 461
 need for, 460
 mustard, quick way of preparing, 461
 uses for, 27
 preparation for, 227
 sponge for fever, 228
 sweat, in patient's home, 227
 temperature, for infant, 658
 tepid, temperature of, 227, 460
- Bathing, importance of, 156**
- Baths, 224**
 cleansing, in illness, 228
 continuous, 607
 apparatus and procedure, 607
 effects of, 600
 precautions, 607
 sea, 159
 sitz, effects of, 600

- Baths—(*Continued*)
 temperature of, 227
 see also Hydrotherapy
- Bath-tubs, cleaning of, 174
- Batter-bread, soft, 498
- Bed, air, definition, 230
 cradle, definition, 230
 head of, elevated, 333
 in pelvic operations, 657
 protection of, inserting rectal tube,
 333
 water, definition of, 230
- Bed-making, important points in, 229
- Bedrooms, 248
- Beds, 229
- Bed sores, 229
 how treated, 230
 prevention of, 229, 230
 see also decubitus
- Bedwetting, 473
- Beef, appearance when healthy, 501
 for beef tea, 487
 for broth, best cut for, 642
 juice, 487, 500
 preparation of, 464
 pulp, 501
 tea, 487, 521
 best made from, 644
 to roast, 502
- Behavior, 589
 control, 589
 definition, 589
 environment and, 589
 of mental patient, reported to physician, 597
- Belladonna, active principle, 40
 definition, 40
 poisoning, 46
 symptoms and treatment, 46
- Bellevue Hospital, 649
- Belongings, patients, care of, 548
- Beri-beri, 488
- Beverages, 521
 alcoholic, dangers of, 161
 and broths, 521
 which contain tannin, 525
- Biceps muscle, function of, 76
- Bichloride of mercury, 47
 antidote, 47
 minimum and maximum dosage, 19
 solution, apothecaries' system, 51
 solution, metric system, 51
 solution, precaution of, 48, 49, 51,
 53, 54
 undesirable as a disinfectant, 317
- Bile, 88, 90, 655
 function of, 622
- Bile—(*Continued*)
 in urine, test for, 144
 office served by, 116
 secreted by, 622
- Bile duct, common, 92
 secretion of, 92
- Biliousness, definition, 202
 how caused, 202
- Binder, scultetus, 321
 abdominal, 412
- Bismuth subcarbonate, as intestinal
 astringent, 25
- Bites, animal and insect precautions
 against infection, 352
- Bivalent, 569
- Bivalve-speculum, how inserted, 378
- Bladder, 95, 338
 adult, average capacity of, 144
 capacity of, 96
 description of, 96
 fundus, 96
 in abdominal section, 329
 irrigation of, 338
 neck, 96
 sphincter vesicae, 96
 trigone, 96
 vertex, 96
- Blaud's pills, active ingredient, 40
- Blindness, cause of, 468
- Blister, treatment of, 27
- Blood, 123
 action of oxygen upon, 123
 arterial, 81
 calcium, in rickets, 457
 in tetany, 457
 reduction of, 656
 cells, coloring with Wright's stain,
 176
 red and white, structural differences,
 85
 changes wrought by respiration,
 118
 circulation through heart, 624
 clotting of, 125, 621
 value of, 621
 when dangerous, 125
 coagulation, 125
 composition of, 123
 count, differential, 314
 examination of, 183
 from the stomach and lungs, 121
 functions of, 125, 623
 in hæmorrhage from bowels, 632
 in hæmorrhage from lungs, 632
 natural protective agencies of, 194
 phosphorus in, 441
 physiology of, 123

- Blood—(Continued)**
 reasons for examining, 255
 red corpuscles, chief function, 123
 see also circulatory system
 serum, 193
 significance in the stool, 450
 stains, removal of, 249
 total quantity of, 123
 transfer, procedure called, 647
 venous, 81, 621
 Wassermann test of, 191
 where digested and absorbed, 115
 Widal test of, 190
- Blood culture, definition, 184**
 how obtained, 184
 significance of, 184
- Blood-pressure, 253**
 after chloral, 41
 and atropine, 14
 and chloroform, 14
 ergot and, 15
 normal, 254
- Blood-vessels, 85**
 and heart, 85, 119
 arteries, 85
 arterioles, 80
 bleeding from below knee, 87
 capillaries, 85
 connecting arteries and veins, 85
 from lungs to heart, 86
 kinds of, 85
 pulmonary, 81
 veins, 85
- Blue baby, definition, 397**
- Blue ointment, active ingredient, 40**
 administration of, 26
- Bodies, warmth of, 160**
- Body, 160**
 bacteria in, 650
 cavity, tapping of, 646
 chemical composition of, 130
 dining-room of, function of, 114
 excretory function of, 127
 fluids, examination of, infectious diseases, 185
 framework of, 70
 garbage box of, function, 114
 heat, definition, 216
 human, chemical elements, 644
 hygienic condition of, 156
 kitchen of, function, 114
 process of building up, 130
 structure, science of, 621
 temperature maintained, 129
 tissues of, 137
 waste products of, how eliminated, 126
- Boiler, double, advantages of, 499**
- Boiling, 495**
- Boils, caused by, 639**
- Bone, atlas, location of, 70**
 and cartilage, 65
 axis, location of, 70
 cancellous, 66
 chemical composition, 67
 in relation to age, 133
 covering, 68
 definition, 65
 developed from cartilage, 67
 from membrane, 67
 functions, 68, 136
 growth, 136
 hyoid location of, 70
 incision, procedure called, 647
 inflammatory diseases of, 311
 inner lining of, 66
 largest in body, 69
 marrow, 66, 136
 description, 66
 kinds, 625
 location, 66
 of red, 66, 136
 yellow, 66
 occipital, 73, 621
 os calcis, location of, 70
 outer covering of, 66
 parietal, 67
 patella, 69
 location of, 70
 repair of fractures, 136
 sphenoid, 67
 structure of, 68
- Bones, articulations of, 66**
 center of long, 67
 classified, 68
 clavicle, 70
 cranial, of infant, 418
 flat, 68, 93
 function of, 136
 in adult skeleton, 69
 in arm, 69
 in forearm, 69
 in leg, 69
 in thigh, 69
 irregular, 68, 93
 long, 68, 93
 canal of, 67
 of the chest, 69
 of the cranium, 71
 of the face, 72
 of the fingers, 624
 of the lower extremities, 70

- Bones—(*Continued*)
 of the pelvis, 397
 of the wrist, 624
 old and young, 65
 pelvic girdle, 71
 ribs, 69
 scapula, 70
 short, 68, 93
 shoulder girdle, 71
 sternum, 66
 turbinate, 104
 upper extremity, 70
 varieties, 93
- Bony surfaces, connections of, 74
 tissue, 66
- Bottles and nipples, care of, 446
- Boracic acid, solution of, 338
- Boric acid, saturated solution, preparation of, 56
 solution, accurately, 52
 solution, approximate, 52
 solution, preparation, 52
 sterile, saturated solution, 49
- Bradycardia, definition, 204
- Brain, 97, 101
 concussion of, 307
 coverings of, 97
 different parts of, 97
 diseases of, 596
 important symptom, 596
 function, main divisions of, 132
 how connected, 97
 membranes covering, 621
 motor areas, 595
 sensory areas, 595
 why the most interesting part of body, 97
- Brandy, technical name of, 4
- Brazing, 495, 644
- Bread, composition and nutritive value of, 497
 crumb and crust, digestibility of, 498
 food constituents of, 645
 most digestible form, 645
 toasting, change produced by, 499
- Breast, amputation, 341
 nursing care of, 335
 feeding, benefits of, 628
 infection of, 417
 insufficiency of nursing care of, 418
 massage of, 415
 nursing treatment of, 417
 postnatal treatment of, 417
- Breast milk, insufficiency of, 416
 swollen, of infant, 423
- Breasts, care of, 415, 416
 drying up of, 416
- Breathing deep, importance of, 159
 mouth, causes of, 158
- Bright's disease, 261
 alarming symptoms in, 261
 urine in, 146
- Brocas convolution, 103
- Broiling, 495
 and frying, difference between, 642
- Bromide of potassium, see Potassium bromide
- Bromism, definition, 9
 symptoms of, 9
- Bronchi, 81
- Bronchial tubes, 80
- Bronchitis, in child, 465
- Broncho-pneumonia, as complication of smallpox, 298
- Broncho-pneumonia in infants, fever in, 465
- Broth, 524
 beef, to prepare, 524
 chicken, to prepare, 524
 clam, to prepare, 524
- Bubonic plague, how spread, 188
- Buccal follicles, 113
- Buck's extension, 354, 355
- Bundle of His, 83
- Burn, by fire, immediate treatment of, 478
 by hot water, immediate treatment of, 478
 by steam, immediate treatment of, 478
 complications of, 347
 with carbolic acid, 574
- Burns, 347
 after-effect of, 347
 by acids, care of, 348
 by alkalis, care of, 348
 classified, 347
 emergency treatment of, 347
 object of, 645
 to remove clothing from, 348
- Bursitis, 307
- Butter, classification, 486, 489
- Buttermilk, 645
- Buttocks, excoriated, infant with, 464
- Cabbage juice, 491
- Cachexia, definition of, 206
- Caecum, 120, 621
- Cæsarean section, 396

- Caffeine, 13, 650
 action of, 18
 dosage, 18
 sodium benzoate, in anaesthesia
 collapse, 326
 Calcium chloride, chemical formula,
 576
 Callus, definition, 310
 Calmette test, 639
 method, 639
 used in, 639
 Calomel, administration, 26
 and salines, 34
 cumulative symptoms of, 20
 definition, 636
 dose of, 34
 fractional dosage, 31
 technical name of, 4
 usual dose, 636
 Caloric unit, 493, 646
 Calories, in egg, 642
 of working man, 492
 Camp, tourist, 162
 Camphor, dose of, 41
 preparation of, 41
 spirit, 41
 gum, 41
 Camphorated tincture of opium, dos-
 age of, 17, 38
 Can, garbage, care of, 169
 Canals, Haversian, contents of, 67
 medullary, contents of, 67
 Cancer, see Carcinoma
 Cantharides, how used, 27
 Capacity, vital, of adult lungs, 119
 Capillaries, 85, 121
 and veins, intestinal, 93
 hepatic, 93
 intestinal lymph, 93
 walls of, 125
 Caput succadaneum, definition, 395
 Carbohydrates, elements in, 560
 and fats, difference in food value,
 644
 examples, 659
 food value, 485, 492, 493
 function of, 487
 in metabolism, 130
 relative food value, 646
 secretion acting on, 115
 stored in liver, 642
 sources of, 487
 Carbolic acid, action, 41
 antidote for, 579
 danger in using, 575
 definition, 40, 41
 Carbolic Acid—(*Continued*)
 poisoning, treatment of, 41, 48
 symptoms and treatment, 45
 solution, from crystals, 54
 preparation, 49, 52
 technical name, 6
 uses, 41
 Carbon dioxide, 171
 Carcinoma, 661
 common name for, 386
 of uterus, period of life occur, 386
 symptoms, 386
 treatment of, 386
 where found most frequently, 385
 symptoms of cervical after meno-
 pause, 385
 Cardiac compensation, 657
 cycle, 119
 depressant, 36
 disease, see Heart, disease of
 stimulants, 36
 Care, of the breasts, 415
 of the mother, 411
 postnatal, 411
 post-partum, 411, 412
 prenatal, 398
 Carminative, definition, 8
 example of, 8
 Caron oil, 7
 Carpals, 68
 Carrel-Dakin treatment of wounds,
 351
 Carrier, 186
 in disease, 186
 typhoid, 290
 Carron oil, 247
 Cartilage, definition, 65
 description, 65
 position and form of, 65
 thyroid, 65
 tissue which forms, 621
 Cartilages, costal, definition, 66
 Cascara, 33
 derived from, 635
 mode of action, 33
 Casein, 487
 Caseinogen, 504
 Cases, nervous or mental, qualifica-
 tions of a nurse for, 318
 Cast, plaster, of arm, 320
 Castor oil, 33
 dose for an adult, 34
 dose for a child, 34
 mode of action, 33
 Catamenia, definition, 374

- Cataract, definition, 205
 part of eye incised, 104
 post-operative care of, 333
- Catarrhal croup, emergency relief, 466
- Catharsis, definition, 8
- Cathartic, and laxative, difference between, 7
 definition, 4
- Cathartics, action of, 33
 dose of, 33, 34
 irritant, 33
 saline, 33
 principle in administering, 33
 vegetable, 33
 oil, 33
- Catheterization, 230, 337
 a cause of cystitis, 264
 attitude toward, 426
 in the female, 337
- Catheterizing female patient, 230, 231
- Catheters, 337
 how sterilized, 337
 preparation of, 337
- Cavell, Edith, 558
- Cavities, contained in trunk, 77
- Cavity, abdominal and thoracic, separation of, 78
 cranial, 73
 dorsal, 104
 female, 371
 glenoid, 103
 pelvic, 95
 thoracic, 621
 ventral, 104
- Cecum, see Caecum
- Celery, chief constituent, 489
- Cell, 101, 138
- Cells, blood, see Corpuscles
 function, specialization of, 141
 muscle, difference between voluntary and involuntary, 128
- Cellulose, 487
- Centigrade scale, boiling point of, 526
 freezing point of, 526
- Central nervous system, divisions of, 594
 functions, 594
 of what composed, 594
- Cereals, cooking of, 496, 506
 long cooking of, 499, 644
 thorough cooking of, 498
- Cerebelli, tentorium, 102
- Cerebellum, 97
 functions of, 131, 132, 650, 657
- Cerebro-spinal fever, after effects, 651
 system, 98
- Cerebrum, 98
 basal ganglia, 97
 capsule, internal, 97
 convolutions, 97
 corpus callosum, 97
 cortex of, 97
 fissures, 97
 function of, 132
 gray matter, 97
 hemispheres, 97
 lobes, 97
 longitudinal fissures, 97
 medullary portion, 97
 neuroglia, 97
 nuclei lenticular and caudate, 97
 optic thalamus, 97
 ventricles, lateral, 97
 white matter, 97
- Cervical adenitis, definition, 456
- Cervical tear, repair of, procedure called, 646
- Cervix, lacerated, 383
 and vulva, dilatation of, in labor, 408
 treatments given, 382
- Chafing, in infant, 457
- Chancre, see Syphilis
- Change, physical, 576
- Changes, chemical types of, 578
- Channels, eliminating, 126
- Chart, clinical, 231
- Charting perspiration, 224
- Chemistry and physics, 569
 acids, 576, 577
 and bases, 577
 and litmus, 579
 composition of, 572
 organic, 571
 aldehydes, 571
 alkali, 576
 ammonia, 575
 antidote, 579
 burns, 574
 characteristic, 572
 atom, 569
 hydrogen, 570
 atomic symbols, 569
 theory, 576
 carbohydrates, 570, 581
 carbolic acid, 577
 chemical changes, 498, 571
 chemical equations, formula, 571, 572
 symbols, 570
 chloride of hydrargyrum, 574
 of sodium, 574

Chemistry and physics—(*Continued*)

chlorine, 577, 581
 classifications, 573, 580
 compounds, 572, 573
 definition, 569
 denatured alcohol, 581
 divisions, two, 569
 double sugars, 581
 electrolytes, 573
 elements, 573, 575
 essential to nursing, 569
 equations, 571, 580
 formulas, 581
 gas flames, 577
 glass, 577
 guarded against dangers, 575
 hydrate of potassium, 574
 hydrocarbon, 570
 hydrolysis, 579
 indicator, 570, 572
 liquids, 574
 litmus, 570
 matter, definitions, 574
 mixtures, 573
 molecule, 569
 neutralization, 580
 nitric acid, 574
 organic, 571
 oxygen, 570
 dilution, 575
 discussions, 573
 symbols, 577
 testing, 580
 physical changes, 576
 poison, 579
 polysaccharides, 581
 salts, 573
 science, 574
 silver nitrate solution, 570
 solids, 574
 specific gravity, 574
 spontaneous combustion, 580
 urine, 574
 albumin in, 581
 boiling, 574
 chlorids, 581
 glucose, 581
 tests, 581
 valency, 569
 water, physical properties of, 575
 purest, 496
 tap water, 570
 temperature, 578
 Chemotaxis, negative, 139
 positive, 139
 example, 139

Chest, 81
 aspiration of, 661
 bones entering into formation of, 69
 capacity, how increased, 81
 superior opening, 81
 Cheyne-Stokes' respiration, 41, 217
 Chicken, appearance when healthy, 501
 Chicken-pox, 275
 complications of, 275
 eruption of, difference from measles, 275
 how transmitted, 272
 incubation period of, 275
 isolation in, 276
 rash of, 276, 633
 symptoms of, 275
 synonyms, 207
 Child, aural douche, method of administering, 461
 bronchitis in, 464
 dental care of, 437
 development of, 439
 diet for eight year old, 449
 effect of improper food on, 444
 exercise for, important points, 629
 female, specimen of urine from, 462
 hoarse, brassy cry, 627
 male, specimen of urine from, 462
 nervous, advice to mother, 604
 predigested foods for, 445
 sick, observation of, 463
 temperature, 461
 swallowing pin or tack, 658
 symptoms, information, 458
 and thumb sucking, 463
 and toothbrush, 626
 unruly, nursing of, 549
 vegetables for, 628
 with chorea, nursing care, 476
 with communicable disease, room for, 474
 with diarrhoea, 452
 with earache, emergency treatment of, 470
 with eczema, care of, 471
 with marasmus, care of, 444
 with pneumonia, position of, 467
 Child hygiene movement, 162, 163
 group, 163
 hygiene, 438
 welfare, 437
 Child's life, different periods of, 440
 Childhood, end of, 441

- Children, constipation in, 452
 and contagious diseases, 459
 convalescent, important points in .
 management of, 459
 convulsions in, 472
 feeble-minded, 473
 first vegetables, 627
 food for, 447
 fruits for, 447
 green vegetables for, 447
 growing, selection of food for, 456
 mentally defective, training of, by
 nurse, 599
 pre-school age, traits corrected, 163
 pulse rate, 120
 skin of, in eruptive disease, 474
 sudden rise of temperature in, 465
 thumb-sucking, 463
 with adenoid growths, 475
 Chill, 204
 significance of, 248
 treatment of, 248
 Chloral, 12, 41
 average dose of, 41
 chloral hydrate, 13
 dose of, 19
 fractional dosage, 32
 therapeutic use, 42
 circulation, 41
 general effect of, 41
 minimum and maximum dosage of,
 19
 Chloride of hydrargyrum, 574
 of sodium, 574
 Chlorides in urine, test for, 581
 Chlorine as a bleach, 581
 family, members of, 577
 Chloroform, 32
 and ether observations when ad-
 ministering, 326
 chemistry, formula for, 581
 derivation of, 32
 physiologic action, 14
 poisoning, treatment of, 47
 toxicity, 32
 uses, 581
 Cholelithotomy, 307
 Cholera, causative organisms, 183
 infantum, 453
 morbus, cause of, 453
 Chop, to cook and serve, 515
 Chorea, 436, 437
 and endocarditis, 265
 definition, 265, 628
 disease, definition, 200
 Huntington's, 595
 nursing care, 476, 629
 Chorea—(*Continued*)
 symptoms, 265
 treatment of, 265
 Chronicizing catgut, purpose of, 323
 Chronic rheumatism, sample menu
 for, 512
 Chyle, 92
 Cicatrix, 312
 Cinchona, chief alkaloid of, 43
 definition of, 43
 Cinchonism, 43
 Circle of Willis, 103
 Circulation, arterial, left ventricle to
 right wrist, 86
 foetal, 418
 purpose of, 122
 general, 93
 infants after birth, 418, 419
 lesser, 84
 organs, 82
 plan of, 120
 portal, purpose of, 122
 portal vein, principal vessel of, 86
 pulmonary, description of, 84
 purpose of, 122
 systemic, 86
 aorta, principal vessel of, 86
 purpose of, 122
 systems of, 86
 Circulatory system, 101, 120
 Circumduction and rotation, 104
 Circumduction of limbs, 132
 City sanitation, 164
 Claustrophobia, 592
 Clavicle, 70, 620
 Cleanliness, internal, 159
 ordinary, 157, 178, 184
 surgical, 184
 Clinical chart, definition, 231
 Clothing, infants, 629
 Club foot, 309
 Coagulation of blood, 124
 Coagulation time, normal, 124
 Coal oil, swallowing of, first aid, 478
 Coal-tar derivatives, 42
 Coca, action of, 12
 Coca leaves, alkaloid of, 44
 Cocaine, 32
 action on the eye, 13
 hydrochloride, 12, 17
 poisoning, symptoms, 45
 and treatment, 47
 solution, preparation, 53
 Cocci, 176
 varieties, 640
 Coccyx, 373

- Cocoa, for invalids, 516
 to make a cup of, 522
 Cod liver oil, derived from, 635
 technical name of, 4
 Codeine, action of, 18
 dosage of, 18
 sulphate, dosage of, 17
 Coeliac axis, 84
 Coffee, 525
 abuse of, 525
 active constituent, 642
 injurious element in, 523
 its production, 525
 method of preparing, 522
 rule for making, 523
 to make a cup of, 522
 uses of, 525
 Cohesion, definition, 138
 Cold, action on bacteria, 181
 baths, in scarlet fever, 283
 packs, 225, 600
 Colds, cause, care and prevention of,
 159, 160
 in an infant, simple procedure to
 prevent, 465
 repeated, indication of, 627
 Colic, 625
 characteristic cry of, 459
 nursing care, 625
 symptoms of, 453, 625
 Colitis, 453, 632
 dietary treatment, 659
 Collapse from anaesthesia, treatment,
 326
 Colle's fracture, 354
 Colon, 121
 Colostrum, definition, 398
 Colporrhaphy, 374
 Columbia University, Teachers Col-
 lege of, 649
 Column, spinal, description of, 74
 vertebral, uses of the, 137
 Coma, 204, 219
 conditions that might cause, 219
 with diabetes, prevention, 260
 Coma-vigil, 204
 Coma-virgil, definition, 219, 632
 Common disinfectants, 196
 Common names of Latin drugs, 3
 Communicable diseases, 266, 632
 by whom reported, 270
 definition, 266
 examples, 266
 method of, 267
 nervous system, 266
 to prevent spread of, 267
 Communicable diseases—(*Continued*)
 to whom reported, 270
 transmission by insects, 267
 Completion type of questions, 619
 Complications, 298
 diabetic, treatment of, 261
 of labor and puerperium, 424
 post-operative, 341, 342
 Compound, definition, 576
 licorice powder, dosage of, 19
 Compresses, 231, 232
 to infected eyes, 231
 Conception, definition, 396
 Condiments, 526
 uses of, 526
 Condyle, definition, 67
 Confinement, probable time of, 400,
 649
 aseptic condition after, 413
 Congenital, 200, 436
 deformity, 309, 436
 injury, 648
 Congestion, hypostatic, 254
 preventive care, 632
 Conjunctivitis, 629
 Connective tissue, 137
 Constipation, 452
 and mother's milk, 448
 breakfast, dinner and supper in, 521
 diet for, 520
 five factors in overcoming, 256
 in children, treatment of, 452
 prevention, 452
 Consumptive and nostrums, 195
 Contact, definition, 270
 Contagion, fear of, in the nurse, 544
 Contagious diseases, 269
 difference in care from infectious
 case, 269
 doctor's and nurse's responsibility,
 270
 information concerning, where ob-
 tainable, 269
 of children, avoidable, 165
 nursing responsibility in, 271
 quarantine of, 166
 three most common, 269
 incubation, 269
 stage communicated, 269
 symptoms, 269
 Contra, meaning of, 313
 Contracture, Volkmann's, 333
 cause, 333
 Contusion, definition, 353
 Convulsion, 204
 appearance, 265
 epileptic, dangers from, 656

- Convulsion—(*Continued*)
 mustard bath in, 27, 460
 tonic and clonic, 218
- Convulsions, 218
 causes in children, 472, 629
 emergency treatment of, 218, 472
 general, bath in, 219
 intelligent observation in, 599
 special points in, 218
- Cooking and care of food, 494
 importance in cereals, 496
 of meats and cereals, 496
 on vitamines C, 490
- Cord, prolapse of, first aid, 426
 spermatic, 313
 spinal, 98
 stump of, 653
 umbilical, primary hemorrhage
 from, 419
 care of, 421, 423
- Cords, vocal, 117, 655
- Corpuscle, Malpighian, 95
 red blood, function of, 123
 white, amoeboid movement of, 123
 white blood, chief function of, 123
- Cortex of kidney, 94
- Coryza, 200, 632
- Costal cartilages, 66
- Cough in diphtheria, 279
- Cough, terms used in describing, 632
- Counter-irritant, definition, 5
 example, 637
- Counter-irritation, 201
- Country, advantages and disadvantages, 165
- Courtesy to attending physician, 543
 when succeeded by another nurse,
 545
- Coverings, 160
- Coxalgia, 436
- Cranial cavity, 73
 nerves, 98, 623
 pairs, number of, 624
 second, 623
 tenth, 623
 to heart, lungs and stomach, 98
 sutures, names, 71
- Craniotomy, 396
- Cranium, bones of, 71
- Crawford Long, 311
- Crede method, 649, 653
- Creolin, 27
- Crepitus, definition, 313
- Cretinism, definition, 629
 to what due, 140
- Crisis, 201, 203
 definition, 203
- Croton oil, 4
 dose of, 17, 18
 how best to administer, 17
 mode of action, 33
 technical name of, 4
- Croup, 466
 catarrhal, emergency relief in, 466
 characteristic cry of, 459
 false, 466
 membranous, correct name for, 466
 spasmodic, nursing measures for,
 466
 symptoms, 466
 treatment of, 466
 true, 466, 658
 proper treatment of, 466
- Crustaceans, 485, 644
- Crystalline lens, function of, 131
- Culture media, solid, 180
 medium, 183
- Culture, positive, 184
 throat, 278
 articles necessary for, 639
- Cultures, precaution when taking, 180
 blood, 184
 how obtained, 184
 significance, 184
- Cumulative action, reasons for, 11
 drug, action of, 634
 definition of, 11
- Cuneiform, 70
- Cup, public, legal status of, 165
- Cupboards, care of, 169, 405
- Cupping, dry, 232
- Cups, dry, object of applying, 232
- Curds, significance in the stool, 457
- Curettage, definition, 374
- Curette, uses of, 321
- Curvature of spine, 74
- Curves, normal, of spinal column, 71
- Curie, Madame, 311
- Cyanosis, common causes of, 202
 definition, 201
- Cystic duct, location of, 625
- Cystitis, 264, 375
 cause of, 264
 definition, 264, 375
 following childbirth, 427
 preventive measures, 426
 urine in, 147
- Cystocele, 308
- Cystoscopic examination, preparation
 for, 338

- Dakin's solution, 351
- Death of a patient, 247
- Decoction, 522
- Decomposition, 182
- Decubitas, 201
- Deep breathing, importance of, 159
- Defects, congenital, 437
- Definition, 4
 - anatomical, 101
 - and physiology, 132
 - chemistry and physics, 589
 - dietetic, 485
 - gynecological, 373
 - medical, 253, 266
 - obstetrical, 395
 - surgical, 307
 - therapeutic, 4
- Deformities, of feet, 363
 - from rickets, 455
- Deformity, congenital, 309
 - and surgery, 309
- Deglutition, 90, 139
- Dehydration, 313, 660
 - hypodermoclysis in, 462
 - symptoms, 661
- Delano, Jane, 557, 558
- Delirium to quiet, 249
 - sudden onset, 206
 - tremens, definition, 597
- Delivery at home, to prepare for, 405
 - chill after, 413
 - retention of urine, 413
- Deltoid, location, 80
- Deltoid muscle, function, 78
 - location of, 77
- Delusion, definition, 593, 596
- Delusions, 592
 - attitude of nurse toward, 601
- Dementia praecox, divisions of, 593
 - knowledge necessary to nurse, 596
 - mental habits to be discouraged, 597
 - senile, 632
- Demulcent and emollient, difference
 - between, 7
 - definition, 8
 - example, 8
- Denatured alcohol, 581
- Dental hygiene, 437
- Dentist, advertising, 555
- Dentition, at what age, 627
- Deodorant, 308
- de Paul, St. Vincent, 557
- Depletion, 200
- Depressant, respiratory, action of, 655
- Desquamation, 200, 268, 633
 - after scarlet fever, 200
- Desserts, for children, 628
- Detergent, 308
- Development, retarded, symptoms of, 472
- Development and teething, 439
- Dextrosum, common name of, 3
 - dosage of, 3
 - therapeutic use, 3
- Diabetes, 204, 259, 632
 - blood sugar in, 260
 - breakfast, dinner and supper, 521
 - coma in, treatment, 260
 - complications in, 261
 - diet, 653
 - foods in, 510, 512, 513
 - meals in, 513
 - mellitis, diet in, 143
 - outstanding symptoms, 527
 - treatment of, 527
 - special bread, 642
 - specific gravity of urine in, 146
 - symptoms, 527
 - treatment in, 160, 259
- Diabetic luncheon, 659
- Diagnosis, 203
- Diapedesis, definition, 125, 631
- Diaper, 421
- Diaphoretic, 6
 - definition, 4
 - and diuretic, difference between, 7
- Diaphragm, location, 77, 78, 80, 624
 - openings, 81
- Diarrhoea, 452
 - acute, treatment of, in infancy, 453, 455
 - care of diapers in, 453
 - causes of, 452
 - diet for, 520
 - kinds of food in, 510
 - summer, nursing measures, 452
 - prevention of, 454
- Diastole, 122, 660
- Diathermy, 242
- Dick test, 191
- Dicrotic, 200
- Diet, carbohydrate-free, 517, 644
 - during puerperium, 519
 - exclusion of sugar and starches, 645
 - fat in, 513
 - foods other than milk, for child, 628
 - for Bright's disease, 517
 - for child of eight, 499
 - for child with defective nutrition, 515
 - for colitis, 515

- Diet—(*Continued*)
 for constipation, 509, 520
 for diarrhoea, 509, 520
 for gastric ulcer, 507, 643
 for gastritis, 509
 for nephritis, 509
 for normal person, 643
 full typical, 518
 high caloric, 508, 643
 in cardiac disease, 642
 in habitual constipation, 518
 in high blood pressure, 517
 in jaundice, 507
 in older children, 449, 450
 in pellagra, 509
 in pregnancy, 644
 in scarlet fever, 514
 in scurvy, 457
 Karell, 509
 laxative, light, 516
 Lenharz, 507
 light, 516
 menu for, 659
 typical, 518
 liquid, 511
 liver, 508
 low carbohydrate, 508
 low protein, 508, 642
 mixed, 513
 necessary elements, 489
 nine months, 630
 nourishing, 516
 of child nine to twelve months, 630
 prenatal, 399
 salt-free in general oedema, 515
 salt poor, 508
 Sippey, 511
 soft, typical, 518, 659
 source of fat, 487
 special, 512
 to increase mother's milk, 417
 to prevent goiter, 514
 typhoid, when meat is added, 513
 typical, 518
- Dietetics, 485, 642, 653, 659
 definitions, 485
 diseases from, 488
 necessary for nurse to know, 485, 642
 questions on, 645
 vitamins, 488
- Dietotherapy, definition, 642
- Diets, special, 511
- Digestion, chemical, 113, 527
 conditions favorable, 116
 conditions retarding, 116
 definition, 139
- Digestion—(*Continued*)
 gastric secretions in, 114
 mechanical, 114
 mouth, 113
 of starch, in intestines, 643
 in mouth, 643
 in stomach, 643
 oral, most important factor in, 114
 organs of, 90
 physiology of, 113
 processes, 114
 most essential, 114
 products of, how conveyed to
 blood, 93
 secretions in intestines, 115
 stomach, 114
 tongue, office in, 90
- Digestive apparatus, 89
 fluids, 90
 juices, 114, 115
 system, organs of, 90
 seat of absorption, most important, 526
 tract, main divisions of, 90
- Digestive disorders, gastro-intestinal, 450
 diseases, nutritional, 450, 455
 constipation, 452
 diarrhoea, 452
 stools, 450
- Digifolin, physiological action, 637
- Digital infection, definition, 345
- Digitalis, 12, 35, 36, 656
 action of, 12, 35
 action on pulse, 36
 botanical name, 37
 cumulative action, 11
 derivation, 634
 dosage of, 17, 18, 37
 indications for discontinuing, 37
 infusion of, dosage of, 37
 in therapeutics, 35
 physiological action of, 35
 preparations of, 37
 symptoms, cumulative, 11
 therapeutic use, 42
 tincture, dosage, 37
 effect, 18
 untoward symptoms, 20
- Dinner, for convalescent operative patient, food principles in, 512
 to include all important foods, 511
 with no meat, menus for, 514
- Diphtheria, 278, 279
 adverse symptoms in, 281
 and tonsillitis, throat in, 280
 alarming symptom, 634

Diphtheria—(*Continued*)

- antitoxin, 194, 656
 - dose of, 278
 - how obtained, 193, 630
 - immunizing dose, 640
- complications of, 279, 298, 633
 - to avert, 281
- constitutional symptoms of, 279
- contagion, 279
- effect on the heart, 279
- exciting cause of, 280
- excretions dangerous in, 220
- germ causing, 638
 - shape of, 638
- how transmitted, 272
- incubation, 630
 - period in, 630
- infection, seat of, 187
- immunity, 640
 - test for, 656
- immunization, 475
- isolation in, 273
- nurse's precautions in, 279
- nursing care of, 279
- point of entrance, 187
- precautions to prevent spread of, 187
- preparation of skin for, 278
- prognosis of, 651
- prophylactic means, 185
- release from quarantine, 281
- Schick test in, 191
- sequelae in, symptoms of, 283
- throat in, 280
 - culture, method of obtaining, 281

Diplococci, 639

Directories, nurse's central, value, 539
 Directory, central, membership in, 539

Discharge, vaginal, in child, 475

Disease, acute and chronic, 203

- animal parasite, cause of, 205
- Basedow's, 259
- bodily resistance to, 640
- Bright's, urine in, 146
- communicable, 266
 - points in selection of room, 474
- Constitutional, 206
- contagious, 205, 266
 - necessary for nurse to recognize, 474
- crisis in, 206
- deficiency, 205
- definition, 162
- delirium in, 206
- endemic, 202
- factors to promote, 156

Disease—(*Continued*)

- germ theory of, 181
 - discovery of, 311
 - germs, nature's destroyers of, 156
 - Grave's, 259
 - immunity to, 192
 - infectious, 186, 205, 266, 268
 - best room for patient with, 273
 - stages of, 268
 - insect-borne, example, 639
 - mental, late in life, 632
 - patients with, 606
 - of lung, change in respiration, 291
 - of pleura, change in respiration, 291
 - of skin, caused by mold, 180
 - orthopaedic, early symptoms, 363
 - Pott's, 436
 - nursing care of, 364
 - preventable, 163, 274
 - rules for prevention, 188
 - seasonal, 205
 - sporadic, 102
 - transmitted by flea, 640
 - transmitted by mosquito, 640
 - transmitted by tsetse fly, 640
 - venereal, personal precaution of nurse, 385
- Diseases, 186
- air-borne, 186
 - communicable, 632
 - classification, 632
 - combated by serum-therapy, 633
 - early symptoms, 633
 - eruptive, 633
 - how conveyed, 651
 - specific protection, 268
 - ward technic, 270
 - contagious and infectious, difference in care of, 269
 - contra-indicate, general anaesthesia, 647
 - due to diet, 488, 489, 513
 - digestive in infants, 455
 - genito-urinary tract, female, 384
 - infectious, nursing aims, 656
 - inflammatory, of bone, 311
 - inherited, examples, 648
 - and nursing measures, 599
 - of bladder, 261
 - of blood, 255
 - of brain, 596
 - of childhood, 477
 - infectious, frequent, 626
 - of ear, 467
 - of eye, 467
 - of kidneys, 261
 - of nerves, 596

Diseases—(*Continued*)

- of nose, 467
 - of spinal cord, 596
 - of throat, 467
 - pelvic, treated by radium, 387
 - preventable, proportion of, 190
 - prevented by vaccination, 633
 - reportable, 162
 - requiring special diet, 511, 512
 - specific, drugs used in treatment, 637
 - spread by animals, 267
 - by carriers, 169, 633
 - by flies, 168, 188, 640
 - by insects, 161, 191
 - by milk, 168, 503, 633, 638
 - treatment, restraint in, 632
 - types spread by droplet infection, 639
 - vascular system, nursing chief essential, 657
 - venereal, 298
 - water-borne, 168, 170
- Disinfectant, 308
- Disinfectants, 322, 314
- common, 196, 317
 - efficiency of, increased, 196
 - points in choosing, 197
- Disinfection, 196
- concurrent, 270
 - of excreta and discharges, 198, 631
 - of hands, 316, 317
 - of linen, 198
 - of mattress and pillows, 196
 - of nurse's hands, 198
 - of rooms, 198
 - of urine, when necessary, 199
 - why necessary, 199
 - of utensils, 198
 - of yourself, 196
 - and sterilization, difference between, 197
 - solutions for, 196
 - terminal, 270
- Dislocation, definition, 352
- Distal, definition, 104
- Diuretic, 6, 636
- and diaphoretic, difference between, 7
 - definition, 8
- Doctor, ability of, 546
- Door knob, infection from, 273
- Dorsal cavity, 104
- Dosage, 15
- excessive, symptoms of zinc, 46
 - fractional from solutions, 28
 - fractional from tablets, 28

Dosage—(*Continued*)

- in children, 16
 - less than six months old, 16
 - minimum and maximum, 19
 - rectal, hypodermic and oral compound, 17
 - regulation, 15
 - Young's rule for calculating, 16
- Double boiler, advantages of, 499
- Douche, 233
- after labor, 379, 380
 - hands for, 380
 - to prepare articles used for, 380
 - aural, for child, 461
 - technic of, 626
 - for cleansing purposes, 233
 - intra-uterine, 379
 - to prepare patient for, 379
 - precautions to be observed in giving, 379
 - spinal, effects of, 600
 - temperature of, 380
 - to arrest hemorrhage, 380
 - vaginal, 27, 380
 - implements used in, 380
 - to the patient, 380
 - why given, 233
- Douches, 233, 378
- duration, 379
 - position of patient, 379
 - pressure, 379
 - quantity of solution, 379
 - solutions used, 378
 - to relieve inflammation, 379
 - vaginal, 378
 - varieties of, 233
- Dover's powder, active ingredient, 635
- definition, 41
- Drainage and plumbing, 174
- Dressing, 320
- forceps, to sterilize, 318
 - hands in surgical, 328
 - how best sterilized, 319
 - mode of, and ethics, 539
 - of an abdominal wound, 321
 - precautions when removing, 320
 - reinforcing a, 320
 - soiled, how to dispose of, 165
 - surgical, nurse's hands prepared for, 321
 - surgical preparation of, 316
- Dressings, wet, why used, 320
- Drinking cup, public, legal status of, 165
- Drinks, from fruit juices, 512
- Droplet infection, 183, 185

Drug, action on blood, 13
 action on female genital organs, 13
 action on intestinal tract, 13
 action on respiration, 13
 action on stomach, 13
 addiction, definition, 601
 treatment of, 602
 carminative, 636
 contracting pupil, 14
 cumulative, 11
 definition, 3
 dilating pupil, 14
 in ascending doses, 636
 limit of tolerance, 11, 651
 official, 3
 physiological action, 637
 psychosis, 603
 systematic effect, 10
 therapeutic action, 637
 limit, 19
 to reduce temperature, 635
 with anaesthetic properties, 12
 with astringent properties, 12
 with emetic properties, 12
 with expectorant properties, 12
 with heart stimulant properties, 13
 with hypnotic properties, 13
 with narcotic properties, 13
 with sedative properties, 12
 withdrawal of, 601
 untoward effect of, 10

Drugs, 18
 acting on brain and nerves, 12
 acting on heart, 12
 acting on kidneys, 12
 acting on skin, 12
 acting on uterus, 42
 action of, 18
 administration by hypodermic injection, 21
 by intravenous injection, 21
 by inunction and fumigation, 21
 by rectum, 23
 classification of, 635
 common names, 3, 4
 dosage of, 16, 17, 18, 19
 home medicine cabinet, 26
 in uterine hemorrhage, 637
 methods of administration, 21, 634
 mydriatic, 637
 of animal origin, 10
 of mineral origin, 10
 of vegetable origin, 10
 origin, action and uses, 10
 physiological action, definition, 11
 why nurse must know, 11
 poisonous, 44

Drugs—(*Continued*)
 preparations, liquid, 636
 solid, 636
 purposes of administering, 636
 reducing temperature, 12
 reliability of, 28
 sleep producing, 634
 sources of, 636
 specific, 3
 therapeutic actions, definition, 11
 used as antiseptic washes, 25

Dry-cupping, 232

Duct, cystic, 625
 hepatic, 91
 right lymphatic, 88
 thoracic, 88

Ductless glands, 134, 135

Duodenum, 93

Dura mater, 97

Dwellings, methods of heating, 173

Dys, meaning of, 313

Dysentery, 453
 characteristic of the stools in, 292
 excretions, dangerous in, 220

Dysmenorrhoea, definition, 375
 relief of, 381

Dyspnoea, 200

Dystocia, definition, 374

Dysuria, 641
 definition, 145

Ear, discharging, 469
 foreign body in, 468
 irrigation of, 241
 middle, 100

Earache, 470
 characteristic cry of, 459
 inflammations in, 471

Eberth, bacillus of, 182

Eclampsia, definition, 397
 elimination in, 427
 first aid in, 425
 hot pack in, 425
 nursing care of, 427
 prognosis, 428
 quiet in, 427
 symptoms of, 427
 treatment, 428

Ectopic gestation, 375
 danger of, 375
 pregnancy, 376
 treatment of, 376

Eczema, 471

Edema, 138, 219
 condition in, 219
 definition, 632

Edith Cavell, 557

- Educational training, advanced, for
 - nurses, 537, 554
- Egg, caloric value, 494
 - hard-boiled, 500
 - raw, digestion of, 497
 - soft-boiled, digestion of, 497
- Egg-nog, 523
 - preparing and serving, 516
- Eggs and biliousness, 497
 - care of, 496
 - classification, 486, 489
 - food constituents, 645
- Electricity, room lighted by, 172
- Element, definition, 576
- Elements, chemical, 576
 - chemical, in the body, 490, 644
 - how supplied, 644
 - classification of, 575
 - food, 485
 - most active, 577
 - number of known, 569
- Elimination, definition, 126, 138
 - physiology of, 126
- Emaciation, 516
- Embolism, 201
 - chief danger of, 658
- Embolus, 312
- Embryotomy, 374
- Emergencies, in children, 477
- Emergency bag, nurse's, 543
- Emesia, 202
- Emesis, post-operative, treatment for,
 - 386, 387
- Emetic, 6
 - apomorphine, 40
 - definition, 8
 - dosage, 8
 - examples, 8
 - given hypodermically, 636
- Emetics, 6, 12
 - easily procured in household, 8
- Eminences, bony, 70
- Eminence, canine, 70
 - cruciate, 70
 - frontal, 70
 - parietal, 70
- Emmenagogue, definition, 4
- Emollient and demulcent, difference
 - between, 7
- Emotion, definition, 589
- Emotions, control of, in mental patient, 590
- Empyema, 294, 307
 - as a sequel, 294
 - nursing care of, 294
 - operation for, care regarding drainage, 467
- Emulsion, definition, 7
- Endemic disease, definition, 202
- Endocarditis, 254
 - acute, nursing care of, 254
 - and chorea, 265
 - complication of inflammatory rheumatism, 256
- Endocardium, 86
- Endocrine glands, 258, 623
 - system, 101
 - important organ of, 621
- Endometritis, definition, 374
- Endosteum, 66
- Enema, emollient, 235
 - method of giving, 234
 - to bed patient, 234
 - nutritive, stimulating, 235
 - position of patient, 208
 - purgative, 234
 - starch, method of giving, 234
 - preparation of, 234
 - purpose of, 233
 - stimulating nutritive, 235
 - precaution before giving, 235
- turpentine, method of giving, 233
 - preparation of, 233
 - purpose of, 233
- Enemata, and caloric irrigations, 233
 - medicated, important points, 235
 - normal salt solution, 234
 - nutrient, 236, 521
 - special care in, 235
 - soap-suds, 235
 - undesired effects from improper administration, 461
- Energy, 137, 570
- Energy, law of conservation of, 570
- Energy requirement average, 511
- Energy requirements in fever, 526
- Energy value, calculation of, 487
- Engagement, obstetrical, 402
- England and development of nursing,
 - 558
- English equivalents, 2
- Enteric fever, see typhoid
- Enteroclysis, 244, 245, 660
 - in dehydration, 660
- Entero-colitis, 436
- Enuresis, 201, 652, 626
- Environment, and disease prevention, 161
- Enzyme, 487
 - of gastric juice, 114
 - pancreatic juice, digesting protein, 645

- Epidemic, 202**
 poliomyelitis, synonym of, 207
 suppression of, 640
Epigastric region, 89
Epiglottis, location, 105
Epilepsy, emergency treatment of, 472
 grand mal attack, description of, 594
 nursing care of, 607
 symptoms, 606
Epileptic convulsion, sources of danger in, 605
 treatment of, 605
Elipetics, care of, special precautions, 605
 dietary rule for, 656
Epiphysis, definition, 363
Episiotomy, definition, 397
Epistaxis, 201, 202, 222
Epithelial tissue, 137
Epsom salts, see magnesium sulphate
Epsom salts enema, 237
Equations, 580
Equivalent measures, 57
Erector spinae, 80
Ergot, before placenta expelled, why not given, 415
 definition, 15
 fluid extract, dosage, 19
 in large doses, 15
 in moderate doses, 15
 long continued use, 15
 usual dose, 415
Erucltation, 202
Eruptive fevers, care of skin, 220
Erysipelas, 348, 631
 bacteria cause, 175
 cause of, 348
 germ causing, 631
 incubation period, 349
 nursing care of, 348
 symptoms, 631
 when isolated, 349
Erythrocytes, 620, 623
Escharotic and rubefacient, difference between, 7
Eserine, action on the eye, 13
Ether, 12
 anaesthesia, by whom discovered, 311
 and chloroform, difference between, 32
 back, nursing measures, 336
 bed, preparation, 337
 by mouth, precautions, 24
 care of patient recovering from, 325
 Ether—(*Continued*)
 derivation, 32
 or chloroform, observations when administering, 326
 precautions, 326
 to prepare a patient for, 325
 toxicity, 32
Ethics, code of, to insure a perfect, 540
 definition of, 535
 and history of nursing, 649, 653, 659, 662
 nursing, 535
 and merits of physician, 546
 of nurse, 547
Ethyl oxide, see ether
Etiology, definition, 640
Eustachian tube, 100, 103
 function of, 135
Ewald-Boas test meal, 252
Examination, 377
 cytoscopic, preparation for, 338
 digital, 377
 gynaecological, usual methods of, 377
 and operation, 376
 physical, 158
Examinations, gynaecological, 378
 and dressings for, 378
 instruments used in, 378
Excessive dosage, 46
Excision, 311
Excreta, 219
 disinfection of, 198
Excretion, 115
 and secretion, difference between, 115
 definition, 138
Excretory function, 127
 organs, examples, 126, 157
Exercise, children, 629
Exophthalmus goitre, 259
Exostosis, definition, 363
Expectorant, apomorphine as, 40
 definition, 637
 examples, 4
Expectorants, 6, 12
 dosage of, 6
Extension and counter-extension, 354
Extension of limbs, definition of, 132
External oblique muscle, 78
Extra-uterine, 395
Extract, definition, 9
Extravasation, 201
Extremities, bones of, 70
Extremity, upper, bones of, 624

- Eye, 250
 atropine and morphine, effect on, 14
 defect of, incident to school life, 160
 description of, 99
 drops in, 467
 fluid, how discharged, 131
 foreign bodies in, 467
 gonorrhoeal infection in, 468
 infected, 231
 drug commonly used, 40
 personal precautions in washing, 251
 in nervous and mental disturbances, 595
 intelligent care of bedridden patient, 251
 irrigation of, 241
 dangers of, 241
 medicine in, 250
 patients, to evert lids, 467
 to open, 467
 pupil of, 131
 at rest, 103
 secretion of, 131
 Eyes, infected, 40
 Eyeball, removal of, procedure called, 646
- Face, bones of, 72
 Faeces, examination of, 183
 characteristics, valuable in diagnosis, 126
 composition, 219
 observation of, 219
 odor in, 220
 Fahrenheit scale, boiling point, 526
 freezing point, 526
 Fainting, emergency treatment of, 472
 Faintness, immediate treatment of, 249
 Fallopian tubes, 372
 function of, 373
 removal of, procedure called, 646
 "False croup," definition of, 626
 False ribs, 69
 Family dissatisfaction with nurse, 545
 with physician, 545
 Fascia, 77
 Fat as an article of diet, 513
 digestion of, 621
 important source, 485
 soaps, 116
 source of, 487
 Fatigue, results of, 103
- Fats, 493
 animal, important, 493
 food values, 485, 492, 500
 how digested, 497
 in metabolism, 130
 relative food value, 646
 secretion acting on, 115
 substitutes for, 493
 when given, 513
 when withheld, 513
 Fatty acids, 116
 Favus, cause of, 180
 Feces, see Faeces
 Feeble-minded, institutional care of, 473
 Feeding, 441
 forced, best method, 607
 see also Gavage
 infant, 442
 interval, 625
 post-operative with cleft palate, 476
 rules for the sick, 512
 supplementary, 627
 Feet, care of nurses', 155
 Fehling's test, for sugar in urine, 142
 Femoral artery, location, 87
 Femur, 68
 Femur, fracture of, 355
 Fermentation, 139
 Fetus, see Foetus
 Fever, 220
 acute rheumatic, 256
 cerebro-spinal, after effects, 651
 continuous, 220
 eruptive, the skin in, 220
 intermittent, 220
 malaria, cause of, 188
 mouth in, 251
 patients, drinks for, 512
 reduction of, 461
 remittent, 220
 rheumatic, nursing care in, 255
 scarlet, isolation in, 273
 specific, 220
 sponge bath for, 228
 typhoid, 285
 Fevers, classification, 651
 eruptive, 220
 fluids in, 509
 general symptoms of, 221
 loss of weight in, 509
 how minimized, 509
 Fibrin, 124
 Fibrinogen, 124
 Fibula, 70
 Fifth cranial nerve, 622

- Fifth nerve, see Trifacial nerve, 109
- Fingers, bones of, 70
- Fireplaces, advantages of, 120, 173
- First aid, in burns, 478
- in coal oil poisoning, 478
- in collapse from anaesthesia, 326
- in convulsions, 218
- in eclampsia, 425
- in epilepsy, 472
- in fainting, 472
- in hæmorrhage from typhoid fever, 289
- in labor, 408
- in post-partum hæmorrhage, 424
- in prolapse of cord, 426
- in swallowing foreign body, 477
- in uterine hæmorrhage, 386
- in wounds, 350
- Fish, 500
- appearance when healthy, 501
- food value of, 501
- methods of cooking, 501
- preferred method of cooking, 500, 501
- Fission, 179
- Fissure, 309
- Fistula, 309
- formation between stomach and intestine, procedure called, 647
- recto-vaginal, 384
- vesico-vaginal, 384
- Fistulas after childbirth, 428
- Fits, epileptic, 218
- hysteric, 218
- Flaccid, 577
- Flagella, 177
- Flame smoke, 578
- Flatulence, 202
- in typhoid and pneumonia, 290
- progressively increasing, 332
- Flaxseed poultice, rules for making, 242, 464
- Fleider, Caroline, 557
- Flexibilitas cerea, definition, 593
- Flexion of limbs, definition of, 132
- Flexure sigmoid, 103
- Flies, 188
- breeding of, 189
- crusade against, 188
- diseases caused by, 188
- how destroyed, 166
- Floating ribs, 69
- Florence Nightingale pledge, 540
- Fluid, amniotic, definition, 396, 398
- extract of cascara sagrada, 3
- definition, 9
- Fluid—(*Continued*)
- extract—(*Continued*)
- of ergot, dosage, 19
- stronger than tincture, 55
- Fluoroscope, 309, 310
- Foetal circulation, purpose of, 122
- life, how maintained in uterus, 400
- movements, when observed, 402
- Foetus, definition, 395, 648, 659
- nourishment of, 397
- position of, in utero, 400
- presentations of, 409
- Follicular stomatitis, 272
- Fomentations, see Stupes
- Fontanelle, anterior, age of closing, 629
- Fontanelles, 397, 441, 650
- definition, 397
- Food, absorption, 643, 646
- adulteration of, 169, 170
- prevention of, 170
- amount required, 494
- factors which determine, 492
- artificial, for sick infant, 448
- best, for newborn baby, 420
- care of, 495
- before cooking, 495, 496
- complete classification of, 485
- consideration in choosing, 486
- cooking and care of, 495
- reasons for, 495
- ways of, 495
- definition of, 490
- digestions and absorption of, 493
- element, 485, 488
- fuel value, computation of, 645
- fundamental principles, examples of, 486
- group, heat producing, 491, 494
- most heat producing, 490, 494
- high protein content, 645
- how protected, 168
- infection of, 168, 169
- material, energy in, measurement of, 493
- necessary, 494
- organic, divisions of, 485
- perfect, 490
- constituents of, 646
- preservation, 525
- preserved, 169
- preserving of, 169
- processes available, 646
- reasons for cooking, 645
- selection and preparation of, 494
- serving of, success in, 507
- value, 491

- Food—(*Continued*)
 value of fish, 501
 of skim milk, 503
 vegetables as, 506
- Foods, 167, 490
 and milk, 167
 animal, 491
 carbohydrate, 493
 carbohydrate-rich, 492
 cellulose, valuable in, 645
 classification, 643
 concentrated, 490
 constituents of, 492
 energy-yielding, 487
 fat-rich, 492
 force-producing, 491
 for laxative diet, 489
 heat-producing, 490, 646
 in constipation, 509
 in diabetes, 511
 chronic, to be avoided, 519
 in diarrhoea, 509, 510
 in emaciation, 516
 in gastritis, 509
 in nephritis, 509
 in obesity, to avoid, 508
 iron-rich, 492, 643
 mineral, 489
 mineral-rich, 492
 necessity for cooking, 495
 nitrogenous, 493
 in nephritis, 514, 519
 protein, incomplete, 644
 protein-rich, 492
 relative value, starches, proteids,
 fats, 500
 salt-rich, 492
 special in treatment of anaemia,
 507
 tissue-building, 491, 646
- Foot, arch of, 78
- Foramen magnum, 73
- Foramen ovale, 104, 649, 650
- Forceps, uses of, 321
- Forearm, arteries of, 87
 bones of, 69
 flexor of, 76
- Foreign body, definition, 437
 in ear, 468
 in nose, 468
- Formalin, formaldehyde gas in, 199
 fumigation with, 199
- Formula, 442
- Fowler's position, 330
 powder, active ingredient, 635
- Fowler's solution, 635
 active ingredient, 40
 definition, 41
 dosage of, 19
 indications for discontinuing, 19
 precautions in giving, 4
 technical name, 4
 therapeutic use, 42
- Fractional dosage, computation, 28
- Fractional dose, computation by hy-
 podermic, 241
- Fracture, applying dressing to, 353
 bone, how repaired, 136
 Colle's, 354
 compound, definition of, 353
 of forearm, supplies for, 355
 of the femur, 355
 definition, 352
 fibrous union in, 355
 forms of, 353
 greenstick, definition, 353
 of both bones of the leg, first aid in,
 353
 Pott's, definition, 354
 skull, 356
 symptoms and signs of, 352
- Fractures, 352
 Buck's extension, articles needed
 for, 354, 355
 counter-extension, 354
 extension in, 354
- Fractures in aged, 136
 simple and compound, and infec-
 tion, 356
- Framework of body, definition, 70
- France's second contribution toward
 care of nursing, 558
- Fresh air, in pneumonia, 292
 treatment, 295
- Fricasseeing, 495, 644
- Frost-bite, 250
- Fruit, chief constituent of, 489
 juices, valuable in fevers, 646
 salad, recipe, 497
- Fruits, as food, 506
 for laxative effects, 512, 643
 ingredients in, 488
- Fry, Elizabeth, 557
- Frying, 495
- Fumigation of rooms, 199
 preparation of room for, 200
 with formalin, 199
 with sulphur, 199
- Function, definition, 138
- Fundus uteri, definition, 397
- Fungi, 180

- Fungus, definition, 180
- Furuncle, 201
- Gain, in infancy, 628
- Galactagogue, definition, 5
 - example, 5
- Galactorrhœa, definition, 395
- Gall bladder, 92
 - description of, 92
 - drainage, procedure called, 646
 - location of, 92
 - removal of, procedure called, 646
- Ganglia, basal, 97
- Ganglion, definition, 138
 - Gasserian, 99
- Gangrene, 312, 348
 - after carbolic acid, 41
 - after ergot, 15
 - by a tourniquet, 348
 - with diabetes, prevention of, 261
- Garbage can, care of, 169
 - city, 169
 - proper disposal of, 639
- Gas, pains, to relieve, 332
 - room lighted by, 173
 - sewer, 174
- Gaseous elements, 569
- Gastric juice, 88, 90, 621
 - action, 115
 - enzymes of, 114, 642
 - glands secreting, 88
 - office, served by, 116
 - source, 115
 - ulcer, 257
- Gastritis, 116
 - acute, common causes, 657
 - diet for, 509
- Gastrocnemius, 654
- Gastro-enterostomy, 312
- Gastro-intestinal diseases, 256
 - X-ray, preparation for, 252
- Gavage, 237
 - food amount, given by, 237
 - character of, 237
 - temperature of, 237
 - and lavage, difference between, 237
- Gelatinoids, effect of heat on, 488
- General massage, 242
- General nursing, 651
- General nursing, symptoms and signs, 215, 241
 - medical diseases, definitions, 200
- Generative organs, after confinement, 415
 - Generative organs—(*Continued*)
 - female, anatomy and physiology of, 371
 - pelvic, function of, 371
 - Genitals, external, female, 371
 - Genito-urinary organs, 94
 - diseases of, 384
 - Genius, definition, 598
 - Geographical tongue, 223
 - Germ theory of disease, 181
 - by whom discovered, 311
 - Germicidal agents, 640
 - solution about a sickroom, 196
 - Germicide, definition, 5
 - Germs, destroyers of, 156, 179
 - destruction of, 179
 - how carried, 186, 271
 - outside the body, 181
 - transmission of disease, 186
 - Gestation, duration of, 138
 - ectopic, 375
 - Girdle, pelvic, 71
 - shoulder, 71
 - Gland, 134
 - compound, 134
 - tubular, 94
 - ductless, 135
 - largest, 135
 - mammary, 81
 - parotid, duct of, 89
 - simple, 134
 - thyroid, description, 87
 - Glands, adrenal, 624
 - function of, 624
 - location of, 624
 - Bartholin's, 371
 - function of, 371
 - infected, 371
 - Brunner's, 115
 - classification and examples, 135
 - compound, 134
 - ductless, 135
 - ductless, 598
 - development of, 598
 - endocrine, 623
 - infected, 371
 - lachrymal, function of, 132
 - Lieberkuhn's, 115
 - lymphatic, 88
 - function of, 123
 - parathyroid, 89
 - parotid, 88
 - salivary, 113
 - location of, 113
 - secretion of, 113
 - sebaceous, 127
 - secretions of, 88, 113

- Glands—(*Continued*)
 simple tubular, 134
 Skene's, 372
 inflamed, 372
 sublingual, 88
 sub-maxillary, 88
 thymus, 89
 Glenoid cavity, 103
 Glossites, tongue in, 223
 Glove, 317
 rubber, to sterilize, 317
 why used, 317
 Glucose, test for, 143, 581
 Glycerin, 116
 Glycerin-turpentine enema, 237
 Glycosuria, 641
 Gmelin's test for bile in urine, 144
 Goitre, types commonly seen, 259
 Gonorrhoea, 300
 bacteria cause, 175
 caused by, 633
 female, nursing care of, 384
 in the female, dangers of, 376
 personal care when nursing, 384
 seats of infection in, 300
 Goodrich, Annie, 561, 562
 Gout, foods eliminated in treatment of, 644
 Graduate nurse, activities, 555
 Gram negative bacteria, example, 175
 positive, example, 175
 stain, preparation of, 175
 Gram's stain, 175
 Grand mal, description of, 594, 632
 Granulation, 312
 healing by, 352
 Grave's disease, 259
 Gravidia, definition, 397
 Growth, retarded, 440
 soluble poisonous products, 181
 Gynæcological nursing, 371
 Gynæcology, 373
 treatment consists of, 382
 Habit, definition, 589
 Habits, 473
 Hæmatocele, etc., 314
 Hæmaturia, definition, 145
 Hæmoglobin, 115, 118, 123
 Hæmolytic, 344
 Hæmophiliac, definition, 125
 Hæmostat, uses of, 321
 Hæmostatic, definition and ex-
 ample, 5
 Hairs, 127
 Hallucination, definition, 593, 656
 Hands, care of nurses', 155
 disinfection, 187
 methods of, 317
 Hare lip, 309
 nursing care, 336
 Harrison Act, 37
 Harrison Act, nurse's responsibility for enforcement, 37
 Harrison's groove, definition, 437
 Harrison law, drugs under, 635
 Haversian canals, 67
 H. C. L., 527
 Headache, nervous, relief of, 248
 Health, definition, 162
 conditions which undermine the, 156
 factors in maintaining, 156
 public, nurse's responsibility, 166
 while traveling, 160
 Healthy carrier, 638
 Hearing, special nerve of, 100
 Heart, 82, 83, 101, 120, 253
 Heart action, after chloral, 41
 action, factors affecting, 119
 action, failing, symptoms of, 253
 rhythm of, 122
 Heart and blood vessels, 82, 83, 119
 blood-vessels carrying venous blood, 83
 blood vessels leaving, 85
 cavities, location, 83
 name, 83
 number, 83
 Heart and circulation, drugs affecting, 12
 Heart, contraction of, 660
 covering of, 85
 disease, chronic, care of, 477
 disease of, nursing care in, 253
 in diphtheria, 281
 lining and covering of, 86
 location in thorax, 83
 period of relaxation, 660
 sedatives, 36
 stimulant, 36
 emergency, 635
 emergency, digitalis, as in, 35
 valves, location, 83
 name, 83
 number, 83
 Heat, 216, 242
 application to unconscious person, 660
 body, 216
 dry, 242
 extreme, action on bacteria, 181

- Heat—(Continued)
 and metabolism, 129
 moist, 242
 production of, 655
 prostration, 249
- Heating, most hygienic system, 638
 and ventilation, 171
- Heliotherapy, 203, 243, 636
- Heller's test for albumin in urine, 143
- Hæmatemesis, definition, 205
- Hæmatocele, see Hæmatocele
- Hæmaturia, see Hæmaturia
- Hæmiplegia, 200, 264
- Hemispheres of brain, 97
- Hæmoglobin, definition, 623
- Hæmolysis, definition, 623
- Hæmolytic, see Hæmolytic
- Hæmorrhage, 221, 345
 abdominal, 346
 ante-partum, causes of, 648
 arterial, below elbow, 345
 reasons for pressure in, 86
 below knee, how controlled, 87, 345
 cerebral, symptoms of, 596
 constitutional, symptoms of, 222
 following tonsillectomy, 346
 from the lungs, 221
 from mouth, 222
 from stomach, 221
 in pregnancy, 406, 426
 internal, symptoms of, 346
 intestinal, symptoms of, 221
 means to control, 346
 menstrual period, 385
 palm of hand, how controlled, 87
 post-partum, first aid in, 424
 nursing care of, 659
 primary and secondary, difference
 between, 343
 pulmonary, emergency treatment,
 221
 to recognize, 221
 side of head, how controlled, 87
 surgical, prevention and treatment,
 345
 symptoms, 345
 three varieties, 346
 how recognized, 346
 thigh, how controlled, 87
 vaginal, 385
 after menopause, 385
- Hæmorrhoids, external, 314
 internal, 314
- Hæmostat, see Hæmostat
- Heredity, definition, 203
- Hernia, definition, 314
 inguinal, 95
- Hernia—(Continued)
 strangulated, 307
 umbilical, 476
 varieties, 314
- Herniotomy, post-operative care, 336
- Heroin hydrochloride, dosage of, 17
- Herpes zoster, definition of, 204
- Hexamethylenamin, common name
 of, 6
- Hexamine, dosage, 18
- Hiccough, definition, 139
- Hinge joint, 75
- Hippocrates, 560
- Hippocratic oath, Jones modification
 of, 554
- Histology, 101
- History, 557
- Hoffman's anodyne, 7
 active ingredient, 635
- Homatropine, action on the eye, 13
- Home medicine cabinet, drugs in, 26
- Honor, sense of, 552
- Hookworm disease, how spread, 189,
 190
- Hordeolum, definition, 205
- Hospital, admission of child to, 462
- Hospital, first in United States, 649
- Hot packs, 225, 600
- Hot water bag, 238
- House, private, isolation of conta-
 gious patient in, 273
- House fly, crusade against, 188
 and typhoid, 189
- Houses, healthiest methods of heat-
 ing, 173
- Hughes, Amy, 560
- Humerus, description of, 72
- Huntington's chorea, 595
- Hutchinson teeth, 441
- Hydrate of potassium, common name
 for, 574
- Hydrargyri chloridum mite, common
 name for, 4
 calomel, 33
- Hydrocarbon, 570
- Hydrocele, 314
- Hydrocephalus, 629
- Hydrochloric acid, 15
 action of, 15
 antidote, 45
 technical name, 6
 uses, 15
- Hydrogen dioxide, chemical formula
 of, 577
- Hydrotherapy, definition of, 8
 common forms, 600
 effects of, 600

- Hydrotherapy—(*Continued*)
 continuous bath, apparatus and procedure, 607
 precautions to be observed, 607
- Hygiene, 155, 161
 and bacteriology, 155, 637
 child, 438
 definition, 161
 dental, see Child hygiene
 household, 162
 infant mortality and, 162
 mental, definition, 598
 before labor, 399
 period of life observed, 598
 modern, 164
 of pregnancy, 160
 personal, 155, 638
 prenatal, need for, 403
 public, 161
 rules to be observed by nurses, 155
- Hygienic rules, simple, 639
- Hyoid, location, 70, 105
- Hyosein, dosage of, 17, 18
- Hyper, meaning of, 313
- Hyperacidity, 487
- Hyperalgia, definition, 313
- Hyperopia, 103
- Hyperpyrexia, complication of scarlet fever, 283
- Hyper-thyroid patient, 329
- Hypertonic saline solutions, 56
- Hypertrophy, definition, 205
- Hypnotic, 6, 7, 13
 and anodyne, difference between, 7
 and sedative, difference between, 7
- Hypo, meaning of, 313
- Hypochondriac region, 89
- Hypodermic injections, 239, 240
 abscess following, causes, 240
 method of giving, 240
 reasons for giving drugs by, 240
 tablets, fractional dosage, 28, 21
- Hypodermoclysis, 339
 definition, 339
 in dehydration, 462
 of normal salt solution, in a private house, 339
 temperature of solution, 632
 why used, 339
- Hypogastric region, 89
- Hypoglossal nerve, 96
- Hypospadias, definition, 437
- Hypostatic congestion, 254
- Hypotonic saline solutions, 56
- Hysterectomy, 375
 definition, 375
- Hysteria, 590, 606
 and epileptic fits, difference in, 606
 how controlled, 590
 physical conditions causing, 590
 psychosis, 595
 sympathy in, 606
 symptoms, 606
- Ice-bag, 239
- Ice-box, at little expense, 167
- Ice poultice, rules for making, 243
- Icterus, 200
- Icterus neonatorum, 660
- Idiosyncrasy, 9
- Ileo-caecal valve, 94
- Ileocolitis, definition, 455
- Ileum, 93
 location of, 625
- Iliac artery, 120
 region, 89
- Immunity, 192, 268
 acquired, 192
 active, in diphtheria, 195
 in scarlet fever, 195
 artificial, 192
 how acquired, 192
 immunization serums and vaccines, 192
 natural, 656
 and artificial, difference between, 192
 theory of, 194
- Impetigo, 471
 danger of, 472
 neonatorum, 471
- Impressions, maternal, 403
- Incision, 311
 preparation of skin, 328
- Incubation, 268, 657
 in chicken-pox, 272
 in diphtheria, 269
 in measles, 269
 in scarlet fever, 269
 in small-pox, 269
 in typhoid, 285
- Indicator, 570
- Indigestion, acute, symptoms of, 626, 653
- Infancy, common diseases of, 435
 diseases of, factors in causation of, 438
 end of, 441
 pneumonia in, 465
- Infant, 418, see also Baby
 bathing of, 420
 breast-fed and additional food, 626
 care of, 419, 420

Infant—(*Continued*)

care and feeding of, 421, 441
 cereals for, 627
 chafing in, how relieved, 457
 constipation in, 420, 452
 convulsive twitchings, 424
 cord, care of, 420, 423
 cranial bones of, 418
 cries, 458
 crying, 422
 diarrhoea, 454
 emergency treatment of, 426
 exercise, important point, 629
 eyes of, 419
 feeding, 439
 hours of, 626
 length of time of, 627
 of premature, 439
 quantity, 451
 supplementary, 448
 with whole milk, 442, 445, 652
 first care of, 419
 gain, first year, 627
 hemorrhage of, 424
 infection in, 422
 sites of, 626
 ideal weight, female, at birth, 627
 male, at birth, 627
 jaundice of, 424
 marking to identify, 462
 mortality, 658
 summer, important, 438
 natural food for, 629, 658
 need of water, 446, 448, 652
 new-born, average length, 440
 normal gain, first six months, 628
 second six months, 628
 normal stools, 451
 nursing, 423
 difficulties, 421
 orange juice for, 446, 630, 652
 parts susceptible to infection, 439
 postnatal circulatory changes, 418,
 419
 premature care of, 423, 439, 626
 premature, how fed, 652
 pulse, etc., 120, 419
 routine care of, 421
 sick, preparation of artificial food
 for, 448
 starch in diet, 644
 stools of, 457
 swollen breasts of, 423
 symptoms of malnutrition, 626
 unusual, 424
 syphilis in, 475
 temperature of, 459

Infant—(*Continued*)

tomato juice for, 446
 urine stains on diaper in, 448
 vomiting, causes, 627
 weighing of, 440
 weight at birth, 440
 increase first year, 440
 weight and height, 421
 Infants, clothing, important points,
 629
 feeding, customary intervals, 625
 methods of feeding, 518
 and starch, 497
 stomach, capacity at birth, 658
 Infantile paralysis, micro-organism,
 187
 see also poliomyelitis, 188
 Infected eyes, drug used in, 40
 Infection, 194
 by animals and insects, 352
 carrier of, 631
 channels of, 272
 digital, 345
 droplet, 183, 185
 excretory organs in, 271
 exterior wound prevention, 352
 external, 352
 from door-knob, 273
 how transmitted, 650
 local wound symptoms of, 351
 of breast, cause of, 417
 surgical sources of, 344
 and transmission, 185
 tubercular, in adults, 295
 in children, 295
 Infections, bacterial staphylococcus,
 185
 and communicable diseases, 474
 streptococcus, 185
 tuberculous, frequent sites in chil-
 dren, 474
 Infectious diseases, care of, general
 precautions, 186
 carrier, definition, 186
 causative organism, in body fluids,
 186
 how acquired, 185
 precautionary measures of nurse,
 158, 271
 stages of, 268
 transmission, 196
 Inferior mesenteric artery, 120
 vena cava, 83
 Inflammation, 201, 437
 and infection, 344
 symptoms, 344
 termination, 344

- Inflammatory disease, of the genito-urinary tract, 384
- Influenza, 631
nursing care, 631
symptoms, 631
- Infusion, 339
articles ready for, 340
definition, 5, 311
precaution in, 340
- Inguinal canal, 95
structure found abnormal, 95
structure found normal, 95
- Inhalation, steam, 248
- Inhaler, metal, care of before using, 323
- Injection, hypodermic, to give, 239
colonic, 236
- Injections, hypodermic, 239
insane patient, how taken, 608
- Inorganic acids, 15
- Insane, five treatments of, 591
- Insanity, causes, 590
definition, 591
puerperal, 414
symptoms of, 605
types of, 590
see also Mental diseases, psychosis
- Insects, diseases spread by, 161, 191
in ear, 250
menace to health, 170
- Insomnia, 248
causes, 595
to relieve, 248
- Inspection, vaginal, instrument used in, 378
- Instincts, definition, 597
- Instruments, 321, 378
bichloride of mercury as disinfectant, 317
in appendectomy, 330
in gynaecological examinations, 378
surgical, to clean, 321
to clean, after operation, 322
uses of, 321, 322
- Insulin, 39, 650
derived from, 10
discovered by, 10
method of giving, 635
obtained from, 635
over-dose, signs of, 260, 631
shock, 261, 655
physiological function of, 134
shock and emergency treatment, 46
substitute for, 261
use of, 635
- Inter, meaning of, 313
- Intercostal nerve, location, 98
- Internal cleanliness, 159
- Internal oblique muscle, 78
- Internal secretion organs that furnish, 134
- Intestinal astringent, 25
hemorrhage, symptoms of, 221
juice, action, 115
obstruction, acute, causes of, 658
chronic, causes of, 658
symptoms, 342
source, 115
tract, adult, length of, 622
inflamed condition of, 116
- Intestines, common disease of, 658
digestive juices, 643
large, 91
length of, 625
parasites, diseases caused by, 190
secretions, 116
small, 93
divisions of, 621
length of, 625
- Intravenous infusion, articles needed for, 340
injection, precaution, 340
- Intubation, 470
definition, 470
nursing care after, 470
- Intussusception, age found, 652
treatment for, 454
- Inunction, mercurial, 27
- Invasion, 269
- Involuntary muscles, 128
- Involutional melancholia, definition, 592
- Iodide of potash, cumulative symptoms, 20
of potassium, untoward effects, 21
when and how administered, 24
see also Potassium Iodide
- Iodides, in treatment of syphilis, 656
- Iodine, 26
as antiseptic, 26
compound solution of, 42
poisoning, treatment of, 47
solution, preparation of, 56
stains, removal of, 249
- Iodism, 20
- Iodoform, chemistry formula, 581
uses, 581
- Ipecac, 12
physiological action, 637
wine of, dose, 6
- Iris, 655
removal of parts of, procedure called, 647

- Iron, body requirement of, 486
 - important source, 485
 - solutions of, administration, 24
 - therapeutic use, 24
- Iron, tincture of, dose, 17, 19
 - tea, not to be taken with, 24
 - when and how administered, 24
- Irrigation, 241
 - colonic, method and purposes of, 236
 - of ear, 241
 - of eye, dangers, 241
 - rectal, proper method of giving, 461
 - irrigator, substitute for, 317
- Island of Langerhans, function, 124
 - location, 651
- Isolation, 162, 633
 - instructions for, 273, 274
 - in mental cases, 604
 - length of, in diphtheria, 273
 - in measles, 273
 - in scarlet fever, 273
- Isotonic, saline solutions, 56
- Jaundice, as a symptom, 224
 - diet in, 507
 - post-operative, 342
- Jejunum, 93
- Jelly, Wharton's, definition, 395
- Jenner, Edward, 297
- Joint articulations, divisions of, 75
 - ball and socket, 75
 - motion of, 75
 - hinge, motion of, 75
 - hip, 75
 - movable, membranes surrounding, 75
 - structures, 75
- Joints, 74
 - ball and socket, 75
 - elbow, 75
 - gliding, 75
 - hinge, 75
 - immovable, 74
 - movable, 74
 - pivot, 75
 - structures essential to, 75
 - shoulder, 75
 - types of, 74, 625
 - use of, 138
 - wrist, 75
- Jones modification of Hippocratic oath, 554
- Jones, Mrs. Cadwalader, 554
- Judgment, definition, 592
- Juice, beef, 500
 - pancreatic, 116
 - preparation of, 464
- Juices, digestive, 113, 115
- Kaiserworth, School of, 560
- Karell diet, 509
- Karyokinesis, 101
- Kidney, connection with bladder, 95
 - cortex, 95
 - description of, 94, 95
 - function of, 94
 - hilus, 94
 - Malpighian corpuscles of, 95
 - medulla, 95
 - pelvis, 95
 - pyramids, 95
 - removal of, procedure called, 646
 - sinus, 95
 - tubulus, 95
- Kidneys, 94, 95, 655
 - arteries of, 84
 - office of, 127
- Kitchen sinks, clogging, prevention of, 174
- Klebs-Loeffler bacillus, 182
 - membrane attacking, 183
- Knee, control of hemorrhage below, 87
- Koch, bacillus of, 182
 - discoveries of, 315
- Koplik's spots, 633
- Labarraque's solution, 55
- Labia, incision of, in labor, 647
- Labor, 406, 409, 661
 - average duration, 407
 - complications of, 400, 402, 428
 - dangers, 407
 - enema in advanced, 410
 - first symptoms of, 402
 - how divided, 409
 - hypodermic medication, 407
 - form of preparation, 407
 - method of predicting date, 407
 - natural presentation, 408
 - normal, in the absence of the physician, 406
 - nurse's duty in, 410
 - other presentations, 408
 - precipitate, 396
 - preparations for, 408
 - second stage, end of, 410
 - signs of, 410
 - signs of approaching, 408, 659
 - stages of description, 409

- Labor—(*Continued*)
 symptoms of approaching, 408
 third stage, end of, 410
 Lacerations, degree of, 650
 Lachrymal glands, function of, 132
 Lactation, definition, 397
 Lacteals, 89, 122, 650
 Lactose, 485
 Langerhans, islands of, function, 124
 loss of, how supplied, 124
 Lanolin, derived from, 636
 Laparotomy, 308
 post-operative care, 331
 Larynx, 81
 location of, 82
 Latissimus dorsi, location, 80
 muscle, 77
 Lavage, 237
 articles necessary for, 237
 nurse's duties during, 238
 of the stomach, technic of, 238
 Law, pure-food, 170
 Avogadro's, 571
 Laxative and cathartic, difference between, 7
 Laxatives, dose of, 34
 Layette, articles of, 406
 Lead, toxic symptoms of, 48
 Left auricle, 83
 ventricle, 83
 Leg, bones of, 69
 fracture of, 353
 Lemon albumin, 523
 Lemonade, method of preparing, 522
 Lenhartz diet, 507
 Lens, crystalline, 131
 Lesser circulation, 84
 Lettuce, 645
 Leucocyte, definition, 138
 count, differential, 186
 normal, 186
 function of the, 186, 194
 significance of increase, 186, 314
 Leukemia, definition, 205
 Leukopenia, definition, 204
 Licorice powder, compound, dose, 19, 34
 Ligaments, 77, 102
 broad, 372
 Ligature, absorbable, 355
 Ligatures, and ligaments, difference between, 102
 Lightning, definition, 396
 Limbs, abduction of, 132
 adduction of, 132
 circumduction of, 132
 extension of, 132
 Limbs—(*Continued*)
 flexion of, 132
 rotation of, 132
 Lime liniment, 7
 Limit, therapeutic, 19
 Liniment, definition, 7
 effect of, 7
 lime, 7
 epinephrinae hydrochloridi, see Adrenalin
 Liquor sodae chlorinatae chirurgicis, common name, 3
 dosage, 3
 therapeutic use, 3
 Liquor sodae chlorinatae chirurgicis, see Dakin's
 common name, 3
 dosage, 3
 therapeutic use, 3
 Liquor potassii arsenitis, common name, 4
 precaution in giving, 4
 solution, 3
 Lister, 181
 discoveries of, 315
 tax, 311, 315
 Lithotomy, 308
 position, 377
 Litmus paper, 142
 Litmus, use of, 570
 Liver, 91
 arteries of, 84
 blood supply of, 620
 cells, 91
 description, 91
 lobes, 620
 lobules, 91
 physiological functions, 115
 position, 620
 vessels, 91
 weight of, 92
 Living, rational, 156
 Lobes of lung, 82
 Local baking, 242
 Lochia, abnormal, 414
 danger signals of, 414
 definition, 414
 Long, Crawford, 311
 Lower extremities, bones of, 70
 Loyalty to the physician, 547
 Lugols solution, 42
 Lumbago, strapping in, 320
 Lumbar puncture, 311
 after effects, 656
 dangers in making, 344
 preparation of patient, 339

- Lumbar puncture—(*Continued*)
 region, 89
 symptoms following, 253
 Luminal, 18
 physiological action of, 13, 637
 Lung, left, 82
 lobules, 82
 right, 82
 Lung diseases, respiratory sounds, 621
 Lungs, 82
 arteries of, 84
 characteristic of blood from, 292
 description of, 82
 divisions of, 623
 hemorrhage from, emergency treatment, 221
 lobes of, 82
 vital capacity, 119
 Lye, antidote for, 636
 poisoning, treatment, 47
 Lymph, 88, 123
 definition, 133
 nodes, location of, 133
 sources of, 88
 vascular system, 88
 Lymphatic glands, special function of, 123
 system, 87
 Lymphatics, 122
 purpose of, 123
 Lysis, 201
 Lysol, 380
 solution, preparation of, 53
 Madame Curie, 311
 Magnesium sulphate, 34
 common name of, 4, 635
 definition, 34
 dosage of, 4
 how used, 34
 and typhoid, difference in transmission, 189
 Malaise, 201
 Malaria, point of entrance, 187
 Malaria fever, cause, 188
 Malaria parasite, 43
 action of quinine on, 43
 or yellow fever, screening in, 190
 Male fern, in treatment of tapeworm, 13
 Malleus, 66
 Malnutrition, 445, 627
 Malpighian corpuscle, 94
 Malted milk, method of preparing, 522
 Maltose, 116
 Mammary gland, location, 81
 secretion of, 621
 Mandible, classified, 620
 Mania, definition, 591
 Manic-depressive, psychosis, definition, 593
 knowledge necessary to nurse, 596
 Marasmus, 446, 455, 653
 Marrow, 625
 bone, 66
 Martyrdom, definition, 589
 Mass of mercury, 3
 Massage, active and passive movements, 242
 abdominal, 242
 general, 242
 Masseter, location and function, 77
 Mastication, 78, 90
 definition, 139
 muscle of, 78
 Mastitis, 397, 659
 causes of, 416
 prevention of, 416
 symptoms of, 417
 Mastoid, location, 105
 operation, adverse symptoms after, 470
 post-operative care, 335
 preparation of patient, 317
 Materia medica, 1, 3, 650
 definition, 2
 and therapeutics, 3, 655
 Maternal feeding, value of, 447
 Maternity case, articles nurse should take to, 404
 Matter, definition, 574
 Meals for diabetes, 513
 test, 252
 Measles, 276, 277
 causative organisms, 183, 191
 complications of, 277, 298
 contagium, location of, 278
 and diphtheria, comparative contagiousness, 280
 early symptoms, 633
 how transmitted, 272
 in childhood, 475
 incubation, 630
 period in, 269, 630
 isolation in, 273
 nursing care, 277
 nursing of, 277
 rash of, 277, 630
 disappearing, 277
 duration, 277
 manner of spreading, 277
 skin test for, 191

- Measles—(*Continued*)
 special points in nursing, 278
 symptoms of, 277
 synonyms of, 207
 transmission of, 187
- Measure, how estimated, 494
 wine, 57
- Meat, preferred method of cooking,
 500, 501
 substitute for, 659
 to keep juice in, 502, 645
- Meats,
 and fish, 500
 as a perfect food, 501
 chief constituent, 489
 cooking of, 496
 parasites in, 170
 substitutes for, 500
 to prepare, 502
- Meconium, 422
 definition, 398
- Media, culture, solid, 180
- Median line, definition, 104
- Medical diseases, 253
 nursing, 630, 656
 question on, 630
 and surgical nursing, 476
- Medication, doses by rectal, hypo-
 dermic and mouth, 17
 rectal, by enemata, 235
- Medicinal agents, application of, 27
- Medicinal treatments developed nine-
 teenth and twentieth centu-
 ries, 23
- Medicine, administration through
 tube, 24
 conditions in giving, 22
 history of, 164
 methods of administering to an un-
 conscious patient, 240
 modern and ancient, 164
 in ascending doses, 25
 quickest action in giving, 21
 six ways of giving, 21
- Medicines, care of in medicine closets,
 22
 given hypodermically, reasons for,
 22
 prompt effect of, 22
 reliability, method of, 28
 rules in administering, 22
 to avoid mistakes when giving, 22
 types of, 26
 what regulates the dosage of, 15
- Medium, culture, 183
- Medulla oblongata, 97, 595, 655
 function of, 132
- Medullary canal, 67
- Membrane, covering bones, 622
 covering heart, 622
 covering lungs, 622
- Membrane, mucous, 116
 serous, 116, 134
- Membrane, serous, largest in body,
 102
- Membrane, serous,
 covering chest, interior, 134
 covering contents, 134
 covering lungs, interior, 134
 lining abdomen, 134
 of abdomen, 133, 134
- Membrane, tympanic, 100
- Membranes, 133
 mucous, where found, 133, 134
 serous, where found, 133, 134
 synovial, purpose of, 133
 where found, 133, 134
- Membranous croup, correct name for,
 466
- Memory, 592
- Meningitis, epidemic, 297
 caused by, 651
 organism causing, 640
- Menopause, 374
 cancer, frequently found, 385
 definition, 374
 disturbances at, 385
 increased menstrual flow, 385
 symptoms indicating medical aid,
 387
 vaginal hemorrhage after, 385
- Menorrhagia, definition, 375
- Menstrual periods, hemorrhages in,
 385
- Menstruation, 375
 disorders of, 374
 increased, 385
- Mental age, definition, 597
- Mental defectives, definition, 598
- Mental deficiency, lowest degree of,
 398
 diseases, treatment of, 599
 hydrotherapy, 599
 occupational therapy, 599
 physiotherapy, 599
 psychotherapy, 599
 illness, cause of increase, 603
 institutions, general idea of the
 public, 603
- Mental and nervous diseases, object
 of a course, 591
- Menthol, dosage of, 18
- Menu, convalescent, 519
 for child eighteen months, 449

Menu—(*Continued*)

- light diet, 659
- points to consider in making out, 517, 643
- Mercurial inunction, 27
- Mercurials, 33
- Mercury, 20
 - action of, 12
 - administration of, 26
 - bichloride, as a disinfectant for instruments, 317
 - inunction, 27
 - minimum and maximum dose of, 19
 - overdosing, symptoms of, 20
 - treatment, 20
 - preparations of, 26
- Mesentery, 89, 650
- Metabolic rate, how determined, 252
- Metabolism, 129
 - agencies affecting, 13
 - basal, definition, 204
 - carbohydrates in, 130
 - factors that influence, 129
 - fats in, 130
 - proteins in, 130
 - salts in, 130
- Metal inhaler, care of before using, 323
- Metallic iron, 486
- Metrorrhagia, definition, 374
- Micro-organisms, 175
- Microscope, 174
- Micturition, definition, 204
- Mid-brain and medulla oblongata, bridge between, 622
- Milk, 502
 - amount for child of three, 627
 - and foods, 167
 - and maintenance of life, 505
 - as a food, 490
 - as a food for adult, 505
 - boiling of, 503
 - breast, symptoms of insufficient, 446
 - caloric value of, 494
 - care of, 167, 168, 504
 - casein of, 502
 - certified, 443, 487, 643
 - classification, 486, 489
 - containers, how cleaned, 639
 - cow's constituents used to modify, 447
 - cow's, and disease, 503
 - cow's, substitute for, in vomiting, 443
 - cow's, substitution of, 627
 - diet for increasing, 417

Milk—(*Continued*)

- diseases communicated through medium of, 503
- fat of, 502, 503
- from mother to determine quantity of, 448
- germs in, 168
- how contaminated, 505
- how protected, 168
- human, protein of, 629, 658
- impure, 168
- infected, diseases caused by, 168
- in the home, 168
- keeping hot, 444
- lactic acid, synthetic, 503
- advantage of, 503
- methods to render easily digested, 504
- modification of, 442, 630, 658
- mother's and cow's compared, 503
- mother's, substitute for, 445
- of mother and constipation, 448
- pasteurization, 443
- pasteurized, 443
- peptonized, 504
- points to remember when heating, 504
- poor, dangers of, 626
- predigested, method of preparing, 500
- protein, portion of, 503
- significance of, 168
- skim, 503
- sour, 505
- sterilized, 443, 505
- symptoms of insufficient, 446
- to determine quality, 444
- utensils, how cleaned, 168
- value as food for an invalid, 505
- ways of serving to patient, 505
- Mind, faculties of, 592
- Mineral acids, 15
- Mineral, in eggs, 643
- in spinach, 643
- Mineral kingdom, drugs from matter, 10
 - matter, function in food, 643
 - oil, action in body, 34
 - source obtained, 34
 - salts, 486
 - disease due to lack of, 486
 - foods supplying, 486
 - important salts, 486
- Minerals, food value of, 492
- Minims and drops, 23
- Miscarriage, 397, 649
- Misophobia, 592

- Mitosis, 101
- Mitral insufficiency, 657
 - valve, 655
- Mixture, definition of, 9
- Moisture, action on bacteria, 181
- Molecule, 569
- Mollusks, 485
 - as foods, 644
- Monovalent, 569
- Morbidity rate, 162
- Morning sickness and pernicious vomiting, 406
- Morphine, 37
 - dosage of, 17
 - fractional dosage, computation of, 28
 - Harrison narcotic act and, 37
 - minimum and maximum dosage of, 19
 - nurse's duties in overdose of, 39
 - overdose of, 39
 - physiologic actions of, 12
- Morphine sulphate, 13
 - dose of, 17, 19
 - effect on pupil, 14
 - fractional dosage, 29, 636
 - computation of, 30
 - computation of, for a child, 29
- Mortality, infant, 438
 - causes of, 438
 - effect of hygiene on, 162
 - highest, 438
 - rate, 162
 - season of high, 438
- Mosquito and yellow fever, 190
- Mosquitoes and health, 190
- Mother, post-partum care of, 411
 - important symptoms, 412
- Mother's milk, substitute for, 445
- Motor nerve fibers, 96
- Mouth, 89
 - baby, to clean, 463
 - food changes in, 645
 - hygiene of, 159
- Mouth-breathing, 157
 - and teeth, 159
 - bad effects of, 157
 - causes, 158
 - danger of, 158
 - indication of, 627
- Movement, amoeboid, 136
- Movements, active, 242
 - passive, 242
- Mucous membrane, coats of, 102
- Mucous membranes, where found, 134
- Mucus, significance in the stool, 450
- Multipara, definition, 395, 662
- Mumps, 276
 - complications of, 276
 - incubation in, 276
 - symptoms of, 276
- Muriatic acid, see hydrochloric acid, 6
- Muscle cells, anatomical differences, 129
 - cardiac, 84
 - chief respiratory, 80
 - deltoid, 78, 80
 - diaphragm, 77
 - erector spinae, 77
 - fiber, kind in heart, 84
 - flat, of back, 79
 - function, 77
 - gastrocnemius, 79
 - insertion, 78, 79
 - large, of the neck, 77
 - long, of leg, 79
 - longest, 80
 - of abdomen, 79
 - of chest, 79, 622
 - orbital, function, 80
 - origin, 78, 80
 - pectoral, serratus, 81
 - triceps, location of, 78
 - voluntary, origin and insertion, 79
 - in abdomen, 79
 - in jaw, 79
 - in neck, 79
 - in lower leg, 79
 - in upper arm, 79
- Muscles, 76, 128
 - biceps, function of, 76
 - classification, 128
 - classified, 620
 - deltoid, 77
 - examples, 620
 - functions of, 128
 - how attached, 79
 - insertion of, definition, 77
 - intercostal, 81
 - involuntary, 76, 105, 128
 - location of, 80
 - names of, 76
 - of abdomen, 78, 621
 - of arch foot, 78
 - of arm, principal, 79
 - of back, 624
 - of back, largest, 77
 - of expression, 655
 - of mastication, 78
 - pectoral, 76
 - relation to nerves, 128
 - smooth, 105
 - voluntary, 76, 128

- Muscular movements, voluntary control of, 128
 tissue, definition, 72, 128
 Mustard bath, quick way of preparing, 460, 461
 uses, 27
 Mustard paste, for infant one year, 628
 Mustard plaster, preparation, 27, 464
 Mustard poultice, rules for making, 243
 Mydriatic, definition, 4
 Myocarditis, 254
 Myocardium, 650
 Myopia, 103, 621
 Myringotomy, definition, 437
 Myxoedema, appearance of patient, 259
 specific treatment, 656
 Nails, 127
 Nap, morning, 628
 Narcotic, 13
 Narcotics, 37, 38, 42
 definition, 5
 Nasal drip, 463, 626
 National Association of Health Nursing, 162
 National League of Nursing Education, 538
 National Pure Food and Drug Act, 526
 National T. B. Association, 162
 Neck, large muscle, 77
 Necrosis, 312
 Needles, to sterilize, 318
 Neisser, diplococcus, 182
 Nephritis, 262
 acute, nursing, 262
 complication of scarlet fever, prevention of, 283
 definition, 145
 diet for, 509, 659
 food to be avoided in, 519
 nursing of, 476, 658
 symptoms, 262
 treatment, 661
 nephrotosis, term for, 313
 Nerve, controlling sight, 655
 fibers, motor, 96
 fifth cranial, 99
 function, 99
 intercostal, location, 98
 impulses, course of, 130, 131
 longest, 100
 of hearing, special, 621
 of sight, 98
 Nerve—(*Continued*)
 pneumogastric, 98, 99
 function of, 131
 radial, location, 98
 sciatic, location, 98
 sensory, 96
 spinal, 98
 Nerves, 98
 and special senses, 96, 100, 130
 auditory, 100
 classified, 98
 cranial, 98
 largest in distribution, 98
 to the heart, 99
 to the lungs, 99
 to the stomach, 99
 diseases of, important symptoms, 596
 dorsal, 100
 function of, 100
 olfactory, 100, 625
 reflex action, 130, 620
 sacral, distribution of, 100
 special sense, 100
 spinal, 98
 sympathetic system, functions of, 100
 systems of, 98
 trifacial, 99
 vagus, 81
 Nervous and mental diseases, 472
 Nervous patients, qualifications for nursing, 218
 Nervous system, 96, 101, 264
 central, 96, 623
 controlling involuntary muscles, 105
 diseases of, 591
 divisions of, 625
 function of, 131
 main divisions, 625
 smallest unit of, 622
 Nervous tissue, 137
 Neuralgia, definition, 204
 Neurasthenia, definition, 204
 sympathy in, 606
 Neurilemma, definition, 138
 Neuritis, definition, 204
 Neuroglia, 101
 Neuron, definition, 131, 596
 Neurotic, definition, 139
 Neutralization, definition of, 580
 New-born, 438
 development, 440
 first defecation, 625
 important care, 423
 inanition fever in, 627

New-born—(*Continued*)

- intestinal discharge of, 422, 660
- methods to feed, 439
- quantity of food, 439, 443
- stomach, capacity of, 438
- symptoms, unusual, 424
- syphilis, 475
- weight and rate of increase, 440

Newer type questions, 617-662

- completion, 619
- numerical selection, 660
- selection, 654
- true-false, 650

Newly-born, prophylactic treatment of, 423

Nightingale, Florence, 557, 649

Nipples, care of the, before and after nursing, 415

- and bottles, care of, 446
- general care of, 416
- inspection of, 416

Nitric acid, precautions in handling, 574

Nitrogenous material, organs for removal of, 126, 127

Nitroglycerin, action of, 36

- dosage of, 17
- uses of, 17

Non-karyokinesis, 101

Normal salt solution, methods of administering, 244

- percentage, 50
- preparation, 50

Nose, 80

- foreign body in, 468
- respiration, 118

Nose bleed, 202, 222

Numerical selection type question, 660

Nurse, attitude toward hospitals, 537, 544

- care of hands and feet, 155
- character of, 552
- chief duty during labor, 661
- conduct in sick room, 543
 - toward patients' delusions, 601
 - toward trying psychotic patients, 601
- current events, 557
- disreputable, 540
- duties of, 542
- educational equipment of, 537
- education for prospective, 535
- ethics of engagement, 551
- expense account of, 550
- factor in cure of functional psychosis, 601

Nurse—(*Continued*)

- first trained in America, 660
- good traits in, 155, 556

habits of, 542

how help mentally deteriorated patient, 601

in diphtheria, 280

in gonorrhoea, 384

in typhoid fever, rules for personal care, 286

negligent duty toward, 553

obligations to patient, physician and family, 543

obstetrical, other cases to avoid, 402

value of, 409

personal appearance of, 542

physical attributes of, 537

precautions in contagious diseases, 158, 271

proper mental attitude of, 536

influence of, 536

prospective, qualifications, 535

protection in diphtheria, 280

psychiatric and neurological nursing, 589

qualifications of, 535, 540, 656

reading for, 547

school, 166

unprofessional conduct of, 540

visiting and social worker, duties of, 555

voice of, 552

Nurse and advanced education, 536, 553, 554

and certificate of registration, 538

and contagion, 268

and criticism of predecessor, 553

and dentist, advertising, 555

and diplomacy, 545

and fee, 551

and her fellow nurse, 540

and her profession, 540

and "honor," 542, 552

and "loyalty," 542

and physician advertising, 555

and patient's family affairs, 551

and qualification, important, 541

and references, 541

and social evil, 547

and symptoms of syphilis, 300

and the physician, 540

and training of mentally defective children, 599

and unethical conduct, 540

- Nurse's attitude toward domestics, 548
 after death of patient, 247
 duties in the family, 548
 emergency bag equipment, 543
 emergency cabinet, drugs in, 25
 organizations, national, 538
 relation to bacteriology, 178, 316
 responsibility, public health matters, 166
 senior, attitude toward junior, 542
- Nurses, basis of ethics for, 535
 different branches of work of, 541
 graduate, complaints concerning, 543
 hygienic precautions of, 158
 important questions before, 542
 in foreign work, 560
 pediatric, important qualities, 629
 prevention of disease, 188
 registration, benefits of, 537
 benefit to State, 538
 superintendent of, qualifications, 536
 uniform in public places, 539
 unregistered, attitude toward, 539
- Nursing and abortion, criminal, 547
 and animosity of patient, 549
 and care of two patients, 547
 and courtesy to physician, 547
 and criminal abortion, 547
 and criticism of predecessor, 553
 and deceit, 550
 and discharge physician, 546
 and dissatisfaction of family with physician, 546
 and domestics, 548
 and duty toward school, 548
 and engagements, 551
 and fee scale, 551
 and gossip, 551
 and hospitals, 544
 and leaving a patient, 549
 and loyalty to physician, 547
 and mode of dressing, 539
 and mother of family, 548
 of unruly child, 549
 and negligence, 553
 and offensive conduct of family, 545
 and patient's belongings, 548
 family affairs, 551
 and preference of the doctor, 545
 and presumption of improper treatment, 547
 and references, 541
 and social evil, 547
 and the family, 550
- Nursing and abortion—(*Continued*)
 and traveling expense, 550
 and unethical conduct, 540
 and visits of family, 554
 and wearing of uniform, 544
 a profession, 555
 call by the family in, 546
 courtesies if retired from case, 545
 ethics, 535
 basis of, 535
 when succeeded by another nurse, 545
 general, and contagious diseases, 544
 important contribution toward development, 558
 in hospitals, success in, 536
 in private family, record for physician, 247
 institutional, 541
 measures, 347, 348, 458
 of "ether back," 336
 post-operative, 331, 335
 and procedures, 224
 method of nervous headache, 248
 modern, founder of, 562, 649
 obstetrical, 378
 of children and adults, 458
 of epileptics, special precaution, 605
 of patient for indefinite period, 230
 of paretics, special precautions, 605
 of typhoid, important points, 287
 office, 541
 on night duty, 548
 organization, benefit from, 537, 555
 membership in, 538
 private duty, 541
 success in, 536
 problem of duty in, 548
 public health, 541
 success in, 536
 qualifications necessary, 458
 school, 541
 first in United States, 660
 schools of, 536
 state law on, 538
 successful, prime requisite for, 553
 surgical, 307
 when unacceptable, 544
- Nursing, psychiatric and neurological, 589
 apoplectic stroke, 604
 delusions, 601
 dementia praecox, 593
 depressed patients, 606
 deteriorated patients, 601
 epilepsy, 594

Nursing—(*Continued*)

- epileptics, 605
 - apparatus, 607
 - continuous bathing, 607
 - convulsions, 605
 - diet, 605
 - precautions, 607
 - flexibilities, 593
 - force-feeding, 607
 - hallucination, 593
 - hydrotherapy, 599
 - insanity, 591
 - involution melancholia, 592
 - manic depressive psychosis, 593
 - mechanical restraint, 599
 - mental diseases, 599
 - mental disturbance, 595
 - mentally defective children, 599
 - nervous system, 594
 - neuroses, 591
 - nurse's observations, 601
 - paranoia, 592
 - paresis, 593
 - patients watched, 604
 - psychiatric nursing, 600
 - psychiatry, 591
 - psychoneurosis, 591
 - psychoneurotic patient, care, 601
 - psychosis, 601
 - functional, 601
 - nurse's attitude, 601
 - senile, 593
 - restraint, types of, 599
 - schizophrenic, 593
 - special observations, 601
 - qualifications, 600
 - stupor, 593
 - care, 606
 - suicide, 606
 - tube-feeding, 607
 - constitute, 608
 - dangers, 608
 - how often, 608
 - position of patient, 608
 - procedure, 608
 - tray, 608
- Nutrient enemata, formulas, 236
- Nutrition, agencies affecting, 13
 - definition, 138
 - five factors, 439
- Nuts, chief constituent, 489
- Nutting, Adelaide, 561
- Nux vomica, action, 18
 - dosage of, 18
 - preparations, 18
 - tincture of, 18
- Oatmeal, chief constituent, 489
- Obesity, diet, 642
 - foods to avoid, 508, 642
 - underlying causes of, 526
- Objective symptoms, 215
- Obsession, definition, 590
- Obstetric case, surgical technic in, 407
- Obstetrical nursing, 395
- Obstetrics, 653, 659, 661
- Obstetrics and gynaecology, 648
- Occipital bone, description, 73
- Odors, how to overcome, 661
- Oedema, definition, 139
- Oesophagus, 81, 89
- Official drug, definition, 3
- Official preparations, definition, 3
 - liquid, 3
 - solid, 3
- Oil, mineral, 34
- Oil of turpentine, 4
 - technical name, 4
- Oleum morrhuae, dose of, 19
 - common name for, 4
- Oleum ricini, action of, 34
 - common name for, 4, 34
- Oleum terebinthinae, common name, 4
 - tiglii, common name for, 4
 - dose of, 65
- Olfactory nerve, 96, 100
- Omelet, method of making, 496
- Oöphorectomy, definition, 375
- Operating, reasons for empty stomach, 647
- Operating room, in private house,
 - preparation of, 328
 - temperature of, 328
- Operation, 327
 - abdominal, to relieve tympanites, following, 386
 - capital, 327
 - dehydration of patient after, 333
 - discomfort after, 333
 - drugs used to prepare for, 25
 - exploratory, 327
 - field, sterilization of, method, 26, 328
 - gynaecological, 377
 - in private house, room for, 328
 - in the country, to prepare for, 328
 - major, complications, 342
 - mastoid, to prepare patient for, 317
 - nursing measures after, 335
 - pain in the back, to relieve, 334
 - palliative, 327
 - radical, 327
 - rise of temperature, 334

- Operation—(*Continued*)
 special dangers of, 342
 strain on the abdominal muscle,
 after, 334
 thirst, to relieve, 334
 urine, examination of, before and
 after, 329
 vaginal, how prepare patient, 377
 Operations, gynaecological causes for,
 376
 obstetric, 424
 Ophthalmia, 436
 how prevented, 419
 neonatorum, 659
 cause of, 419, 468
 Ophthalmoscope, definition, 205
 Opisthotonos, definition, 204
 Opium, action on insomnia, 38
 on pain, 38
 on respiration, 38
 on secretions, 38
 on temperature, 38
 alkaloids, hypodermic dose of, 38
 derivation, 634
 derivatives, 38
 extract of, 38
 forms of, 38
 from what obtained, 38
 poisoning, treatment of, 39
 symptoms of overdose, 39
 tincture of, dose of, 38
 Oponius, 195
 Optic nerve, 96, 98
 Optic thalamus, 97
 Oral hygiene, 159
 Orange, caloric value, 494
 Orange juice, 630
 beneficial effects, 630
 substitute for, 630
 when given, 446
 Orders, physician's, 606
 Organ, definition of, 137
 of taste, 130
 Organic acids, 15
 Organisms, causative, in cerebro-
 spinal meningitis, 185
 in diphtheria, 185
 in gonorrhoea, 185
 in infectious diseases, 185
 in tuberculosis, 185
 tetanus, method of entry, 639
 Organizations, national nursing, 649
 nursing, for graduate nurse, 538
 Organs, excretory, 126
 genito-urinary, 94
 in abdominal cavity, 90
 of alimentation, 113
 Organs—(*Continued*)
 of circulation, 82
 of digestion, 90
 of generation, female, 95
 of pelvic cavity, 95
 of pelvic cavity, of female, 371
 pelvic generative, functions, 371
 respiratory, 80
 urinary, 141
 functions of, 371
 of female, 371
 Orifices, 408
 Origin, action, uses, 10
 Orthopaedic, 436
 measures, types of patients, 363
 surgery, 363
 Orthopnea, definition, 205
 Os calcis, location, 70
 Os innominatum, 75
 Os magnum, 70
 Osmosis, 139
 Osseous tissue, 137
 Ossicles, auditory, 100
 Ossification, definition, 67
 Osteology, 101
 Osteomyelitis, 308
 acute, 311
 syphilitic, 311
 tuberculous, 311
 Os uteri, definition, 397
 Otitis media, complication of scarlet
 fever, 282
 definition, 205, 436
 diseases frequently following, 470
 prevention of, 283
 symptoms to watch for, 647
 Ovaries, 95
 function of, 373
 removal of, procedure, 647
 Ovariectomy, definition of, 374
 Overflow, definition, 204
 Ovulation, definition, 374
 Ovum, 648
 Oxidation, definition of, 578
 Oxygen, 179
 action upon blood, 123
 and tissues of body, 118
 test for, 580
 Oxy-haemoglobin, 118
 Oysters, creamed, 501
 Oyster stew, to prepare, 524
 Pack, hot, method of giving, 225
 purpose of, 226
 Packs, cold, 225, 600
 hot, 225, 600

- Packs and baths, varieties of and purposes, 226, 227
- Pad substitute for, 327
- Pads, vulva, 412
- Pain, abdominal, to relieve, 249
in chest, characteristic cry of, 459
- Palmer, Sophia, 561
- Pan-broiling, 495
- Pancreas, 88, 94, 655
definition, 624
"island of Langerhans" in, 94
pancreatic juice in, 94
secretions of, 624
- Pancreatic juice, 88, 90
action of, 115
office served by, 116
source, 115
- Paraldehyde, physiological action, 13, 637
- Paranoia, definition, 592, 656
- Paraphimosis, definition, 314
- Paraplegia, definition, 632
- Parasite, 179, 637, 639
and bacterium, difference between, 182
and saprophyte, difference between, 182
animal, examples, 179, 180
diseases produced by, 179, 180
malaria, 189
- Parasites, in meats, 170
intestinal diseases caused by, 190
- Parathyroid gland, 89
- Paregoric, active ingredient, 40
technical name, 4
- Paresis, 596, 605
cause of, 605
constant supervision, need for, 604
general, 593
- Paretic, bladder of, requires special attention, 605
- Parietal bone, 67
- Paris Green, 48
- Parotid gland, 88, 113
- Parotid gland, duct of, 89
- Parotitis, 276, 436
- Parturition, definition, 375
- Passive immunity, diseases, prevented by, 194
- Passive movements, 242
- Pasteur, discoverer of bacteria, 181
- Pasteurization, 629
- Pasteurized milk, 167
- Patella, 69
classification, 69
location, 71
- Pathogenic, definition, 179
- Pathology, definition of, 309
- Patient, admission to hospital, routine, 247
and physician's orders, 606
and swallowing tongue, 326
articles necessary to bathe, 225
bed, 230
death of, duty of nurse after, 247
diabetic, breakfast, dinner and supper, 521
disliking nurse, 549
feeding, 286
general care of anaesthesia, 323
gynaecological nourishment of, 386
pre-operative care, 648
hyper-thyroid, 329
necessity for sometimes deceiving, 550
position in bed, in pneumonia, 292
pre-operative, precautions to be taken, 329
preparation of, for a day, 246
for a night, 246
psychosis, care of, in institution, 600
special care of, under a general anesthetic, 323, 324
to give enemata to, 234
to make comfortable for night, 247
tuberculosis, bill-of-fare for a, 519
typhoid, discharges of, 288
unconscious, to feed, 510
unnecessary causes of discomfort, 229
ward, day routine, 247
night routine, 247
with contagious disease, isolation of, 273
with uterine hemorrhage, 386
- Patient's belongings, care of, 548
- Patients, and refusal of meals, 606
and refusal of treatments, 606
and sympathy in hysteria, 606
bowel function, in care of, 331
depressed, guarded against, 632
diabetic, feature in care of, 259
dieting of, post-operative, 508
pre-operative, 508
dressings and convalescence, on care of, 331
laparotomy, bladder function, in care of, 331
mental, inducements to eat, 603
necessity to watch, 606
refusal of food by, 603
nourishment, in care of, 331
pain, in care of, 331

- Patients—(*Continued*)
 paralyzed, important points in care
 of, 604
 position, care of, 331
 post-operative care of, 331
 suicidal, 604
 water, in care of, 331
 Paula, 557
 Pectoral muscles, description, 76
 Pectoralis, major, 620
 Pediatric nursing, 435
 Pediatrics, 435, 625, 629, 652, 658
 subjects of, 448
 Pediculosis, 471, 652
 treatment of, 471
 Pellagra, diet in, 509
 Pelvic cavity, 95
 female, organs in, 71, 371
 operative cases, elevation of head in
 bed, 657
 Pelvimeter, definition, 396
 use, when important, 396
 Pelvis, bones of, 76, 397
 false, 396
 female, 620
 different from male, 373
 girdle, 71
 true, 396
 Pepsin, 114, 634
 Peptones, 115
 Percentages for solutions, 50, 51
 Perception, 592
 Perforation, intestinal, symptoms of,
 341
 Pericarditis, 254
 Pericardium, description, 84, 622
 functions of, 85
 Perichondrium, 67, 68
 Perineal stitches, 413
 Perineal tear, repair of, procedure
 called, 646
 Perineorrhaphy, after care, dangers,
 384
 definition, 375
 nursing, care, 383
 after operation, 383
 before operation, 383
 Perineum, 373, 655
 female, 373
 lacerated, 383
 laceration of, 383, 424
 causes of, 383, 424
 routine care, after delivery, 648
 during puerperium, 648
 Periosteum, 68
 Periosteum, purpose of, 137
 Peristalsis, definition, 139
 action of cathartics on, 33
 Peritoneum, 92, 655
 functions of, 134
 Peritonitis, 257, 307
 acute, cause of, 257, 341
 definition, 257, 341
 symptoms of, 258, 341
 causes, 257
 dangers, 258
 nursing management of, 258
 position of patient in, 258, 292
 post-operative symptoms, 258, 342
 Pernicious vomiting, 406
 Personal hygiene, 155
 Personality, definition, 597
 Perspiration, 224
 amount, 127
 characteristics valuable in diag-
 nosis, 220
 charting of, 224
 favorable symptoms, 224
 how increased, 127
 decreased, 128
 unfavorable symptoms, 224
 uses of, 127
 Pertussis, 200
 see Whooping cough
 Pessary, to sterilize, 382
 uses of, 382
 Peyer's patches, 285
 Phagocytosis, 308
 Pharmaceutical abbreviations, 1
 Pharmacopoeia, see United States
 Pharynx, 82, 89
 location of, 82
 openings into, 621
 Phenacetin, administration, 25
 dosage and effect, 18
 reasons for, 25
 Phenol, common name for, 6, 637
 Phimosis, definition, 314
 Phlebitis, 308, 349
 care of patient, 349
 chief location, 648
 post-operative, 343
 Phlebotomy, 312
 Phlegmasia alba dolens, definition,
 397
 Phlegmatic, definition, 139
 Phobia, 592
 Phoebe, 557
 Phosphorus, important source, 485
 in blood serum, 441
 Photophobia, definition, 205
 Physical change, 571
 Physician, loyalty to, 547

- Physics, 569
 Physiological action, 11, 12, 637
 definition, 11
 necessary for nurse to know, 11
 Physiology, 101, 113, 132
 and anatomy, difference, 135
 definition, 622
 necessary to nurse's education, 101
 of blood, 123
 of blood-vessels, 119
 of elimination, 126
 of heart, 119
 of muscles, 129
 Pia mater, 97
 Pilocarpine, dosage of, 17
 uses of, 17
 Pin or tack, swallowed, treatment of, 477
 Pinkeye, 629
 Pipes, clogging of, 174
 Pisiform, 70
 Pitchers, how sterilized, 319
 Pituitrin, 43
 action of, 43
 dosage of, 43
 in hemorrhage, 43
 method of administration, 634
 source, 43
 when used, 659
 uses, 43, 650
 Placebo, definition of, 6
 Placenta, definition, 414
 description of, 414
 doctor's inspection of, 413
 functions of, 414
 how to care for, 413
 Placenta-praevia, definition of, 398
 gravity of, 428
 Plague, bubonic, how spread, 188
 Plant acids, 15
 Plasma, composition of, 123
 definition, 623, 651
 Plaster bandage, application of, 354
 Plaster cast, caring for patient, 364
 of arm, 320
 Plaster, mustard, for baby, 27
 rules for making, 464
 Platysma, 620
 Pledge, Florence Nightingale, 540
 Pleura, description, 81, 133
 Pleural cavity, air or gas in, 660
 drainage, procedure called, 647
 Pleurisy, strapping in, 320
 Plexus, 135
 Plumbing and drainage, 174
 Pneumogastric nerve, function, 131
 Pneumonia, 290
 bacteria causing, 175
 broncho, in infants, fever in, 465
 catching cold in, 292
 characteristic sputum of, 292
 crisis in, 291
 dangerous symptoms in, 290
 excretions dangerous in, 220
 frequent change of position of child, 467
 frequent sequel, in children, cause of, 628
 fresh-air treatment of, 292
 germ causing, 640
 hypostatic, 293
 nursing care of, 293
 prevention of, 293
 types liable to occur, 293
 lobar, 651
 lobar and bronchial, difference between, 465
 lobar, delirium in, 249
 exciting cause, 464
 general care of, 292
 heart failure in, 293
 of the left lung, 292
 onset of, 291
 organs involved in, 291
 period of greatest danger, 291
 post-operative, 343, 344
 predisposing causes, 464
 room temperature, 292
 stages of, 290
 symptoms of, 291
 nursing care, 657
 position of patient in, 292
 prophylaxis in, 657
 type, in infancy, 465
 unfavorable symptoms, 292
 Pneumothorax, 660
 Podalic version, 659
 Poison, acid, emergency treatment, 576
 Poisons and antidotes, 44
 acute arsenical, 44
 and symptoms, 44, 45
 treatment, 45
 antidotes, chemical definition, 46
 physiological, definition, 46
 bichloride of mercury, antidote for, 47
 carbolic acid, symptoms and treatment, 45
 definition, 44
 general treatment, 637
 in large doses, 44
 opium, symptoms of, 39

- Poisoning, belladonna, 46
 chloroform, treatment of, 47
 cocaine, treatment of, 47
 general treatment of, 46
 iodine, treatment of, 47
 lye, treatment of, 47
 opium, treatment of, 39
 Paris green, treatment of, 48
 silver nitrate, antidote for, 47
 strychnia, symptoms of, 46
 strychnine, treatment of, 47
 sulphuric acid, antidote for, 47
 unknown, general treatment of, 637
 zinc, 46
- Poliomyelitis, 297, 629
 acute stage, nursing care of, 296,
 297, 628
 frequent age of attack, 628
 treatment of, 628
- Polycythemia, definition, 623
- Polyuria, 641
 definition, 145
- Pons Varolii, 97
- Popliteal space, 79
- Portal circulation, 86
 purpose of, 122
- Portal vein, location of, 624
- Position, Fowler's, reason for, 330
 knee-chest, 376
 lithotomy, 377
 Sims, to arrange patient for, 376
 uses of, 376
- Trendelenburg, 377
 in private house, 330
- Positions, gynecological, 377
- Positive culture, 184
- Post-operative nursing measures, 331
- Post-partum care, 411
- Post-partum hemorrhage, first aid in,
 424
- Posture, poor, 160
- Potassium and sodium tartrate, com-
 mon name of, 4
 dosage of, 4
- Potassium bromide, indications for
 discontinuing, 19
 hydrate, common name for, 4
 iodide, action of, 12
 when and how administered, 24
 dose of, 6
- Potassium permanganate, solution of,
 50
 permanganate stains, how removed,
 249
- Potato, caloric value, 494
- Potatoes, to cook for an invalid, 499
 chief constituents of, 489
- Potent tinctures, 42
 dose of, 42
- Pott's disease, 436, 626
 fracture, 354
 nursing care, 364
- Poultice, flaxseed, 252
 rules for making, 464
- Poultice, ice, 243
 mustard, 243
- Poultices, 242
- Powder, Dover's, 6
 of ipecac and opium, 3
 Seidlitz, 35
- Powdered ingredients, measuring of,
 525
- Precautions, aseptic, after confine-
 ment, 413
- Precipitate labor, definition, 396
- Pregnancy, 395, 400
 breasts, care of, 649
 care of bowels, 398
 of diet, 398
 clothing during, 399
 complications of, 400, 406, 428
 diet, 398
 disorders of, 402, 649
 duration of, 400
 early advice in, 398
 earlier signs of, 402
 eclampsia, symptoms of, 404
 ectopic, 376
 exercise during, 399
 extra-uterine, definition, 395, 648
 hemorrhage in, 406
 high meat diet in, 403
 hygiene of, 160
 kidneys during, 399, 403
 organs requiring care during, 403
 pernicious vomiting in, 648
 physiological signs, 402
 presumptive signs, 648
 rules of bathing, 398
 see also Gestation
 signs of, 401
 symptoms of eclampsia, 648
 teeth, care of, 398
 toxæmia of, symptoms, 403
 tubal, dangers of, 648
 tuber, see Ectopic
 untoward symptoms, 403
 uterus during, 401
 varicose veins during, relief of, 319
- Pregnant women, abnormal symp-
 toms in, 403
 advice to, 402
 instructions of, 402
 urine of, 404

- Premature delivery, 649
labor, 397
- Prenatal care, 398
period, examination of urine, 400
- Preparations, official, 3
- Pre-school period, 435
- Prescription, translation, 23
- Prescriptions, abbreviations used in,
1, 2
symbols, used in, 58
- Presentation, breech, sign of, 662
meaning of, 659
- Presentations, 396, 408, 409
breech, dangers, 410
- Pressure, in arterial hemorrhage, 86
- Preventable diseases, definition, 274
proportion of, 190
- Primipara, definition, 395
- Privy, open, 174
- Problem of night duty, 548
- Procedures, 252
- Processes of digestion, 114
- Proctoclysis, 244, 311
- Prodrome, 203
- Prognosis, 203
- Prolapsus ani, definition, 341
- Prophylactic treatment, 189
- Prophylaxis, 195, 291
- Prostate gland, excision of, procedure,
647
- Prostatectomy, 312
- Protective agencies of blood, 194
- Protein or proteid, 500
definition, 487
digestion of, 527
relative food value, 646
vegetables rich in, 488
where digested, 527, 581
- Proteins, effect of heat on, 488
food value, 492, 500
function in the body, 581
in metabolism, 130
precautions in cooking, 522
produce of, 130
product of, 130
secretion acting on, 115
why important, 488
- Prothrombin, 124
- Protoplasm, 135, 138
living, characteristics of, 135
- Protozoa, 177, 656
- Pruritus, with diabetes, prevention
of, 261
- Psittacosis, definition, 189, 296
- Psoas magnus, 620
- Psychiatric nursing, 589
- Psychiatry, definition, 591
- Psychoneurosis, definition, 591
- Psychoses, psychogenic and organic,
difference between, 598
- Psychosis, definition, 596
functional, nurse as a potent factor
in cure of, 601
involuntional, nursing care, 602
manic, depressive, 593
senile, 593
traumatic, definition, 598
- Ptomaines, 168
- Ptyaline, 113
- Puberty, definition, 374
- Pubiotomy, definition, 395
- Public health, 161
and quarantine, 166
nurse's responsibility of, 166
- Public sanitation, 639
- Puerperal complications, 426
infection, 395, 427
- Puerperal sepsis, definitions, 427
symptoms of, 427
when developed, 427
- Puerperal state, liability to infection,
427
- Puerperium, complications, 428
definition, 397
diet during, 519
nurse's responsibility, 659
- Pulmonary circulation, description,
84
purpose of, 122
- Pulmonary tuberculosis, 294
excretions dangerous in, 220
how communicated, 294
important instructions in, to fam-
ily, 296
to patient, 296
- predisposing causes, 294
veins, how different from other
veins, 81
- Pulse, 119, 216
arrhythmic, 120
dicrotic, 120
during infancy, 120
high tension, 217
in adult, 120
in children, 120
in infants, 120
incompressible, 120
intermittent, 217
irregular, 120
kinds of, 216
low tension, 217
normal, 119
deviations from, 120
points in taking, 217

- Pulse—(*Continued*)
 rate, during sleep, at six months, 627
 rate, normal, 119, 122
 where it may be taken, 86
- Puncture, lumbar, preparation, 339
- Pupil, atropine and, 14
 morphine and, 14
- Purgative, definition, 9
 saline, average dose, 637
 example, 637
- Purgatives, 635, 637
 saline, 637
 vegetable, 635
- Purple Foxglove, drug from, 636
- Pus, formation of, 177, 640
 in pleural cavity, 632
 in wounds, germ responsible, 639
- Putrefactive bacteria, 181
- Pyelitis, definition, 204
- Pyloric stenosis, definition, 629
 pyloroplasty in, 477
- Pyloroplasty, 477
- Pylorus, location, 93
- Pyogenic bacteria, 177
 definition, 179
- Pyrexia, cause of, 129
 definition, 129, 313
- Quadratus lumborum muscle, 78
- Quarantine, 162, 268, 631
 in diphtheria, 273
 in measles, 273
 in private house, 273
 scarlet fever, 273
 release from, 274
- Questions, analogy, statements, 617
 completion type, 619-649
 multiple response, 617
 new type, 617
 numerical selection type, 660-662
 pertinent statements, 617
 selection type, 654-659
 true-false, 650-653
- Quickening, definition, 396
- Quinidine sulphas, 3
- Quinine, 43
 administration, 25
 derivation, 634
 dose of, 43
 reasons for, 25
 therapeutic purposes, 43
 untoward effects, 21
 unusual symptoms, 43
- Radial artery, location, 87
 nerve, location, 98
- Radiology, definition, 636
- Radium, 250
 by whom discovered, 311
 in pelvic diseases, 387
 use of, 636
- Radius, 70
- Rash, in measles, 276
 observation of, 276
 of chicken-pox, 276
 of scarlet fever, 281
- Rate, morbidity, 162
 mortality, 162
 respiratory, in adult, 120
 in child, 120
- Rational living, 156
- Rats, in spread of plague, 188
- Record, urine in, 264
- Rectal, medication, 235
 tube, 333
- Rectocele, 375
 packed, treatment of, 233
- Rectum, drugs given by, 23
 packed, treatment of, 233
- Rectus abdominis muscle, 78, 79
- Red blood cells, 620
- Red Cross, 559, 649
- Reflex action, 130, 620
- Refrigerants, definition, 6
- Refrigerators, care of, 169, 495
- Registration, certificate of, 538
 and training schools, 539
 of nurses, 538
- Regurgitation, simple, due to, 626
- Remedies, heart, 36
- Renal calculi, term for, 313
- Rennet, 502
- Rennin, 114, 655
- Resistance to disease, 640
- Respiration, 117, 217, 622
 accelerated, 217
 artificial, 119
 blood changes in, 107
 chief muscle of, 80
 Cheyne-Stokes, 217
 definition, 117
 external, 117
 internal, 117
 mouth-breathing, 118
 normal, 217
 in nose, 118
 objects of, 117
 organs of, 118
 points in counting, 217
 rate of, at six months, 627
 rate of normal adult, 118
 ratio to pulse, 117
 what controls rate and rhythm, 118

- Respiratory center after chloral, 41
 Respiratory center, location, 117
 depressant, action of, 655
 diseases, 464
 in child, 120
 organs, 80
 rate in adult, 120
 stimulants, 634
 Rest, necessity of, 157
 Restraint of insane patients, types of, 599
 Retarded development, 473
 Retention of urine, 332
 Retina, 99
 Retractor, uses of, 322
 Rheumatic fever, characteristics of, 256
 nursing of, 255, 256
 Rheumatism, acute, comfort of patient in, 255
 chronic, diet in, 512
 drugs given, 636
 inflammatory, complication in, 256
 Rheumatoid arthritis, 256
 Ribs, classification of, 69
 false, 69
 floating, 69
 number, 69
 to what attached, 73
 true, 69
 Rice, boiling, 499
 Richards, Linda, 558
 Rickets, 436, 652
 blood calcium in, 457
 causes, 363
 curative measures, 363
 treatment, 455
 deformities, 455
 disease of bone in, 456
 environment effect on, 161
 preventive measures, 363
 treatment, 658
 sunlight in, 652
 symptoms of, 629
 Right lymphatic duct, 88
 Rigor, 203
 Rinehart, Mary Roberts, 557
 Ringworm, cause of, 180
 Roasting, 495
 Robb, Mabel, 561
 Rochelle salts, see Tartrate of potassium and sodium
 Rocky Mountain spotted fever, 267
 Room, atmospheric condition of, in diphtheria, 278
 disinfection of, 198
 Room—(*Continued*)
 fumigation of, 200
 operating, temperature of, 329
 Rose spots, definition, 205
 Rotation and circumduction, 104
 Rotation of limbs, 132
 Rubber gloves, how sterilized, 317
 Rubber goods, care of, 196, 197
 Rubefacient and escharotic, difference between, 7
 see also counter-irritant
 Rubeola, see measles
 Rule, Young's, for dosage, 16
 Rules, hospital, 551
 Rules and schools of nursing, 551
 Saccharine, 521
 Sacral nerves, distribution, 100
 Sacrum, 620
 Salad, fruit, to make, 497
 Salary, and more than one patient, 547
 Salicylate, overdosage, sign of, 650
 Saline purgative, to be given after calomel, 34
 Saliva, 88, 89
 action, 115
 ferment in, 113
 glands secreting, 88
 office served by, 116
 source, 115
 Salivary glands, 113
 Salivation, cause, 20
 symptoms of, 20
 Salol, action of, 18
 administration, 25
 reasons for, 25
 dosage of, 25
 Salpingectomy, definition, 375
 Salpingitis, definition, 374
 Salt, chemical formula, 50
 Salt solution, 242, 243
 hypo-tonic, 243
 iso-tonic, 243
 methods of giving, 244
 preparation of, 50
 technical name of, 50
 Salts in metabolism, 130
 mineral, 486
 deficiency of, 486
 in the body, 486
 in food, 486
 Salvarsan, administration, 43
 definition, 43, 655
 description, 43
 dosage, 43

- Sanitary excellence, in ancient civilization, 649
- Sanitation, city, 164
- Santonin, action of, 18
dosage of, 18
- Saprophyte, 179
and parasite, difference between, 182
- Saprophytic, definition, 179
- Saturated solution, definition, 56
frequently used, 55
- Scabies, 437
cause of, 472
treatment of, 472
- Scalpel, uses of, 322
- Scalpels, to sterilize, 318
- Scaphoid, 70
- Scapula, 70
- Scar, 311
- Scarlet fever, 281
adverse symptoms, 284
alarming symptoms, 634
and diphtheria, comparative contagiousness, 280
causative organisms, 183
cold baths, 283
complications, 282, 298, 633
desquamation after, 284
diet in acute stage, 659
food after, 284
hot baths in, 283
incubation, 269
period in, 630
isolation in, 273
following, 284
nursing care in, 282
precautions to prevent complications, 283
prophylactic means, 195
quarantine in, 284
rash of, 281
sequelae in, symptoms of, 283
skin in, 281
strawberry tongue, 223
symptoms of, 281
urine in, 284
when and how communicable, 282
- Schick test, definition, 191, 630
procedure, 630
why used, 639
- Schizophrenia, definition, 593
- School, nurses' duty toward, 548
- Schools of nursing, earliest, 560
- Schultze, Carlton test, 191
- Sciatic nerve, 98, 100
- Scissors, to sterilize, 318
- Scoliosis, definition, 437
- Scopolamine, dosage, 43
in "twilight slumber," 43
with morphine, 43
- Screening, importance of, 190
- Scultetus binder, 321
- Scurvy, definition, 626
diet in, 457, 653
infantile, 457
preventive treatment, 658
result of, 643
- Secretion and an excretion, difference between, 115, 204
definition, 138
- Section, Caesarean, 396
- Secundines, 395, 661
- Sedative, 7, 12
- Sedatives, definition, 5
- Seidlitz powder, how to administer, 35
- Selection type of question, 654-660
- Self pity, definition, 589
- Semilunar, 70
- Senile psychosis, definition, 593, 652
- Sensation, 592
the most widely distributed, 132
- Sensations, where interpreted, 132
- Sense, special, 132
organs of, 132
- Sensory nerve fibers, 96
- Sepsis, 315, 661
chill in, 248
puerperal, 427
causes, 427
symptoms, 427
- Septicaemia, 308
- Sequelae, 206, 631
- Serous membrane, 116, 134
largest in body, 102
- Serum, diphtheria, origin of, 194
see also antitoxin
therapy, definition, 8
- Serums, difference from vaccines, 9
- Serums, 193
preparation of, 193
- Serving of food, 507
- Sewer gas, danger from, 174
- Sheet, wet, contagious diseases, 274
- Schick test, 191, 630
- Shock, 341
and internal hemorrhage compared, 341
insulin, emergency treatment, 46
nursing care of, 341
post-operative symptoms of, 341
- Shoes, nurses, 155
- Shoulder, bones of, 70
- Shoulder girdle, 71
- Sick, feeding rules for, 512

- Sickroom, 186
 air of, way to judge, 713
 temperature, 120, 173
 ventilating, method of, 171
- Sight, special nerve, 98
- Sigmoid, flexure, 103, 621
- Silver nitrate, antidote for, 47
 derived from, 635
 solution, preparation, 52
 in minims, 54
- Sims position, 376
- Sinapism, in pleurisy, 661
 in pneumonia, 661
- Singulus, definition, 313
- Sinks, cleaning of, 174
- Sinus, 309
- Sippey diet, 511
- Sister Helen, 558, 662
- Sisters of Charity, founder of, 649
- Sitz-bath, 226
- Skeleton, adult, number of bones, 69
 attachment of muscles to, 79
 functions of, 66
 human, divisions of, 624
- Skene's glands, 372
- Skim milk, 503
- Skin, 127
 appendages, 127
 care of, 157
 diseases, 471
 functions of, 127
 important layers of, 104
- Skin, in eruptive fevers, care of, 251
 of children in eruptive diseases,
 care of, 474
 in scarlet fever, 281
 method of preparing, 318
 primary tissues, 104
 structure of, 650
- Small intestine, 93
 divisions of, 93
- Small-pox, 297
 control of, 651
 prevention of, 297
 prophylactic means against, 297
 serious complications, 298
 synonym of, 206
 transmission of, 297
 vaccination, 165, 298
 by whom discovered, 311
- Smell, special nerve of, 100
- Social evil and the nurse, 547
- Social worker and visiting nurse,
 duties, 555
- Sodium benzoate, 13
 bicarbonate, therapeutic use, 42
 solution, 54
- Sodium benzoate—(*Continued*)
 bromide, 12
 dosage of, 19
 minimum and maximum dosage,
 19
 solution, 49
 cacodylate, 634
 chloride, chemical formula, 576
 normal content in blood, 243
 hydroxide, antidote for, 579
 salicylate, untoward effect of, 21
- Soiled dressings, disposal of, 165
- Solution, alcohol, preparation, 56
 antiseptic, in care of mother, 408
 of newborn, 408
 bichloride, preparation, 49
 bichloride of mercury, preparation
 of, 48, 51
 boracic acid, for bladder, 338
 boric acid, 52
 carbolic acid, 48, 49
 cocaine, preparation, 53
 difference from tincture, 55
 Fehling's, 143
 Fowler's, 41
 from stock solution, 53
 germicidal, about sick room, 196
 Labarraque's, 56
 lysol, 53, 380
 Lugol's, 42
 normal salt, per rectum, 245
 salt, 243, 244
 salt, normal, 50
 sodium bicarbonate, 54
 strength, 55
 supersaturated, definition, 56
- Solutions, 48, 318
 antiseptic, 318
 definition, 55
 disinfectant, 199, 318
 for preparing bladder, 318
 in apothecaries system, 51
 in metric system, 51
 percentage, 31, 48, 50
 preparation of, 48, 49
 saturated, 55, 56
 silver nitrate, tap water in, 570
 stock, 54
- Solutions and tinctures, difference be-
 tween, 55
- Sore throat, infectious, frequent com-
 plication of, 274
- Sores, bed, 229
- Sound, uterine, uses of, 322
- Sounds and vocal cords, 117
- Soup, cuts of meat for, 524

- Spastic, 597
- Special diets, 507
for constipation, 520
for diarrhoea, 520
- Special sense, definition, 132
organs of, 132
- Specific drugs, definition, 3
- Specific gravity, liquids, standard of, 574
solids, standard of, 574
- Specific gravity of urine, 142
in diabetes mellitus, 146
- Speculum, bivalve, 378
Sims, 378
- Spermatic artery, 121
cord, 313
- Sphenoid, 68
- Sphenoid bone, 67
- Sphincter vesicae, 96
- Sphygmomanometer, definition, 206
- Spinal column, 71, 74
normal curves of, 71
- Spinal cord, 97, 620
function, 98
location, 625
- Spinal fluid, examination of, 183
- Spinal nerves, 98, 625
puncture, reasons for, 252
articles needed for, 462
- Spirilla, 176
- Spirit, definition, 9
- Spiritus frumentii, common name for, 4
vini gallice, common name for, 4
- Spirochaeta pallida, see under Syphilis
- Spirometer, definition, 140
body activity, influence on, 140
readings, 140
- Spleen, 90
arteries of, 84
removal of, procedure called, 647
- Splint, temporary, 353
- Sponge bath in fever, 228
- Sponges, abdominal, method of counting, 330
- Spontaneous combustion, 580
- Spore, definition, 177
- Spores, bearing on sterilization, 180
- Sprain, definition, 354
treatment of, 354
- Sprue, definition, 397
- Sputum, examination of, 183
characteristics, valuable in diagnosis, 219
how collected, 641
- Sputum—(*Continued*)
observation of, 219
terms used in describing, 632
- Squill, 12
- Squills, action of, 12
- Stains, blood, on linen, 249
iodine, on linen, 249
potassium permanganate, 249
- Standards, ethical, in a nurse, 541
- Staphylococcus infection, 185
- Staphylococcus pyogenes aureus, 184
- Starch, infants' diet, 497
substitutes for, 515, 644
- Starches, cooking of, 522
food value of, 500
- Statements, analogy, 617
pertinent, 617
- Steak, to cook and serve, 515
- Steam inhalations, 248
- Steam kettle, precautions in using, 248
- Steaming, 495
- Steapsin, 116
- Stenosis, 657
pyloric, 454, 477
- Stensen's duct, 89
- Sterilization, 317
- Sterilization and disinfection, difference between, 197
- Sterilization, fractional, 197, 318
methods of, 318
spores, bearing on, 180
- Sterilized milk, 167
- Sterilizer, substitute for, 329
- Sterno-cleido mastoid, 79
- Sternomastoid, location, 80
- Sternum, 69
- Stewing, 497
- Stimson, Julia, 561
- Stimulants, 634, 635
- Stitches, perineal care of, 413
- Stock, solutions, 53
- Stomach, 90, 101
and arsenic, 24
and soluble iron preparations, 24
arteries of, 84
blood from, characteristics of, 221
capacity, 90, 92
at birth, 658
description, 90
ferments, 90, 114
function of, 114
infant's capacity of, 438
mucous membrane of, 90
nerve supply of, 90
openings, 90, 92, 623

- Stomach—(*Continued*)
 size of, 90
 structure of, 90, 623
- Stomata, 81
- Stomatitis, definition, 205
- Stools, 220, 450, 451, 457, 625
 abnormal, 451
 blood in, 457
 color of, 451
 consistence of, 451
 curd in, 457, 627
 in dysentery, characteristics of, 292
 infant's normal, 422
 mucus in, 457
 normal, appearance of, 451
 observation of, 451
 odor, 451
 of intestinal indigestion, 452
- Strabismus, common name, 437
 definition, 626
- Strangulated hernia, 307
- Strapping, adhesive, 320
- Strawberry tongue, indication of, 633
- Stream-pollution, prevention of, 171
- Streptococcus, haemolytic, 344
 infection, 185
- Strophanthus, action of, 12
- Strychnia and digitalis, difference in
 action on heart, 36
- Strychnia, action of, 44
 antidote, 21
 definition, 44
 dose of, 21
 fractional dosage, computation of,
 28, 29, 30, 31
 toxic symptoms of, 21
 untoward effects, 21
 uses, 44
- Strychnine, 9
 fractional dosage, computation of,
 29, 31
 in anaesthesia collapse, 326
 minimum and maximum dosage of,
 19
- Strychnine, poisoning, 46
 symptoms, 46
 treatment, 47
- Strychnine sulphate, dosage in child-
 hood, 16
 solution, 51
- Stupe, turpentine, 245, 246, 464
- Stupes, use of, 245
 varieties of, 245
- Stupor, definition, 593
- Stuporous patient, nursing of, 606
- St. Vincent de Paul, 555, 557, 649
 b, meaning of, 313
- Subclavian vein, 88
- Subinvolution, definition of, 374
- Subjective symptoms, 215
- Sublingual gland, 88, 113
- Sub-maxillary gland, 88, 113
- Succus entericus, 90
- Sudorifics, definition, 6
- Sugar, classification, 486, 489
 in milk, 642
 in urine, test for, 142
 substitutes for, 515, 644
 in diabetes, 521
- Suicide in depressed patient, 606
 by hanging, artificial respiration in,
 606
- Sulphur, fumigation with, 199
- Sulphuric acid, antidote for, 47
- Sun baths, 243
- Sunlight, action on bacteria, 181
 as a hygienic agent, 166
 beneficial effects, 174
 effectiveness, 166
 effects on tubercle bacilli, 197
- Sunstroke, treatment of, 250
- Superior vena cava, location of, 624
- Supersaturated solution, 56
- Suppository, how introduced, 246
 varieties of, 246
- Suprarenal bodies, location, 89
- Suprarenal bodies, nature of secre-
 tion, 89
- Surgery, 307
 antiseptic, 315
 aseptic, 315
 modern, 314
 orthopaedic, 363
- Surgical cleanliness, definition, 184,
 316
- Surgical dressing, nurse's hands pre-
 pared for, 197, 328
 technic of, 407
- Surgical nursing, 307, 646
- Susceptibility, 194
- Susceptibles, definition, 270
- Suture, continuous, 322
 interrupted, 323
 materials, kinds of, 323
 uses of, 323
- Sutures, 103, 322
 cranial, names, 71
 most common, 322
 silkworm gut and silk, to sterilize,
 318
- Sweat, observation, 219, 220
- Sweetbread, 502, 645
- Symbols, 58

- Sympathetic nervous system, functions, 100
- Symphysiotomy, definition, 395
- Symptom, perspiration as a, 224
- Symptoms, calomel, 20
 cardinal, 215
 digitalis, 20
 Fowler's solution, 19
 general, kidney diseases, 145
 iodide of potash, 20
 objective, 215
 potassium bromide, 19
 prodroma, 215
 subjective, 215
 untoward, digitalis, 20
- Syncope, 202, 632
- Synchondrosis, 66
- Synonyms, 206
- Synovia, definition, 66
- Synovial membranes, 133, 134, 621
- Syphilis, 298
 bacteria cause, 175
 germ, how produced, 299, 638
 inherited symptoms of, 299
 in new-born, 475
 point of entrance, 187
 protection of nurse from, 190
 stages, how produced, 299
 symptoms of, 299
 acquired, 299
 inherited, 299
- Syrup, definition, 9
- System, circulatory, 120
 digestive, 89
 excretory, 137
 lymphatic, 123
 nervous, 96
 respiratory, 137
- Systemic circulation, purpose of, 122
- Systemic effect of drug, 10
- Systems, general, of body, 101
- Systole, 122, 650, 660
- Tabes dorsalis, 594
- Table, operating, 594
 in home, 330
 substitute for, 327
 precautions before placing a patient on, 328, 329
- Tack or pin swallowed, treatment of, 477
- Tact, how cultivated, 556
- Talipes, definition, 363
- Tampons, how prepared, 382
 purpose, 382
 removing, technic of, 382
- Tannic acid, 12
- Tannin, 525
- Tapeworm, treatment of, 13
- Tarsals, 68
- Tartrate of potassium and sodium, dose of, 33
- Taste, organ of, 130
- Tea, 522
 active constituent, 642
 infusion or decoction, 506, 522
 injurious element in, 523
 method of preparing, 522
 rule for making, 523
 to boil water for, 506
- Tears, how discharged, 131
- Technic, aseptic, 316
- Teeth, abscessed, 249
 and soluble iron preparations, 24
 care of, 156
 composition, 72
 Hutchinson's, 441
 hygiene of, 159
 in infancy, 628
 milk eruption of, 440
 number of, twelve to fifteen months, 628
 number set of, 72
 permanent, eruption of, 440
 temporary, 136, 627
- Temperament, 595
- Temperature, 215, 219
 difference in degrees registered by
 axilla, 216
 by mouth, 216
 by rectum, 216
 drugs reducing, 635
 in children, 459
 increase, to what due, 216, 626
 insane patient, how taken, 609
 of body, how maintained, 129
 of infant, 459
 with diseased rectum, 460
 of nursery, during bath, 627
 of sick room, 173
 of three different parts of the body, 216
 points in taking by axilla, 215
 by mouth, 215
 by rectum, 216
 post-operative, 343
 sudden rise in children, 459, 465
 variations, in different fevers, 220
- Temporal artery, location, 87
- Temporal bone, organ located in, 71
- Tenatus, 189
- Tendons, 77
- Tenesmus, 436
- Tentorium cerebelli, 102

- Test, blood, to prove diagnosis, 191
 Fehling's, 143
 for albumin, 641
 meal, 252
 meals, why given to patients, 252
 Schick, 191
 Schultze-Carlton, 191
 Wassermann, 190
 Widal, 190
 when used, 190
- Tests, 190
- Tetanus, 349, 437
 antitoxin, theory administered
 upon, 189
 bacillus, 640, 641
 nursing of, 349
 precautions to prevent, 349
 symptoms of, 349
- Tetany, 437, 627
- Tetavalent, 569
- Theobromine, action of, 12
- Theory, atomic, 576
- Therapeutic action, 11
 limit, 19
- Therapeutic agents of animal origin,
 10
- Therapeutics, definition, 2
- Therapy, 203
 actino, 203
 helio, 203
 occupational, value in mental nurs-
 ing, 602
- Thermometer, clinical, care after use,
 251
- Thermometry, scales used in, 526
- Thigh, bones, 69
- Thoracentesis, 661
- Thoracic duct, 81, 88
- Thoracic viscera, 81
- Thoracotomy, 312
- Thorax, 81
- Throat cultures, examination of, 183
- Throat, in diphtheria and tonsilitis,
 280
 treatment, position for, 470
- Thrombokinase, 124
- Thrombophlebitis, symptoms of, 647
- Thrombosis, definition, 204
 and embolism, 657
 puerperal, chief location, 648
- Thrombus, 312
- Thrush, causes of, 475
 definition, 475
 treatment of, 475
- Thymus, 477
 gland, 89
- Thyroid, 101
 cartilage, position and form of, 65
 gland, description, 78, 88
 isthmus, 87
 lobes, 87
 location, 87
 relation to cretinism, 140
 secretion, active principle of, 140
- Thyroidectomy, post-operative con-
 ditions, 647
- Thyroxin, 140
- Tibia, 70
- Time, coagulation, normal, 124
- Tinctura opii camphorata, common
 name of, 4
 dose of, 4
- Tincture benzoin, method of admini-
 stration, 634
- Tincture ferri chloridi, precautions in
 giving, 24
- Tincture of iodine, antidote, 47
 application of, 26
 smarting after, 26
 to the skin, 26
- Tincture of iron, adult dose of, 19
 dosage, 17
 how to administer, 17
 precautions after, 24
- Tinctures, definition, 5
 and solutions, difference between,
 55
 potent, 42
 dose of, 42
 strength of, 42
- Tissue, bony, 65
 varieties, 65
 building, necessary food constitu-
 ent, 645
 muscular, 76, 128
 of body, 137
 osseous, 137, 625
- Toast, milk, to prepare, 524
 proper method of preparing, 510
- Toes, bones of, 70
- Toilets, cleaning of, 174
- Tolerance of drug, and examples, 11
- Tomato juice, when given, 446
- Tongue, 130
 clinical types, 223
 in digestion, 90
- Tonic, definition, 8
 example of, 8
- Tonsillitis, 307
 bacteria cause, 175
 throat in, 280
- Tonsillectomy, hemorrhage in, 346
 post-operative care, 469

- Tonsils, in infant, 652
- Tonsils, location, 105
- Tooth-brush, used by child, 441
- Torticollis, surgical form, 310
 - treatment of, 310
- Tourniquet, danger of, 309
 - definition, 309
- Toxaemia, definition, 651
- Toxic, definition, 180
- Toxin-antitoxin, diphtheria, 194
 - reactions, 195
 - use of, 634
- Toxins, 177, 651
- Trachea, 82
 - location of, 82
- Trachelorrhaphy, 307
- Tracheotomy, definition of, 470
 - nursing care of patient after, 334, 335
 - post-operative, 334
- Trachoma, nursing care of, 251
- Tract, broncho-pulmonary, function of, 118
 - uriniferous, 74
- Transfusion, 339
 - methods of, 340
- Transversalis muscle, 78
- Trapexuis, 655
- Trapezius muscle, location of, 77
- Trapezium, 70
- Trapezoid, 70
- Trauma, definition, 363
- Traumatic, 202
 - psychosis, definition, 598
- Tray, invalid's, preparation of, 518
- Treatment, gynaecological, 382
 - palliative, 206
 - prophylactic, 189
- Treatment of poisoning, chloroform, 47
 - cocaine, 47
 - iodine, 47
 - lye, 47
 - strychnine, 47
 - supportive, 206
- Trendelenburg, position of, 330, 377
- Trepine, 312
- Treponema pallidum, 639
- Triceps muscle, function of, 76
 - location of, 78
- Trichiniasis, 179
- Trichlorethane, see Chloroform
- Trifacial nerve, description of, 99
- Trional, dose of, 18
- Trivalent, 569
- Trocar, uses of, 322
- Troy weight, 57
- True-false questions, 650-654
- True ribs, 69
- Tripsin, 116
- Tsetse fly, 267
- Tube, administration of acids through, 24
 - Eustachian, 100, 103
 - function of, 135
 - Fallopian, 372
 - function of, 373
 - rectal, 333
- Tube feeding, nasal, 608
 - articles on tray for, 608
 - constituents of, 608
 - dangers of, 608
 - how often to be given, 608
 - order of giving, 608
 - patients most often tube-fed, 607
 - position of patient in, 608
 - procedure, 608
- Tubercle bacilli, effects of sunlight on, 97
- Tuberculosis, bacteria causing, 175
 - common form of, 633
 - diet in, 645
 - diet in nursing, 513
 - early symptoms of, 295
 - excretions dangerous in, 220
 - how communicated, 294
 - hygiene of, 295
 - important point in nursing, 295
 - in childhood, 630
 - one day's fare on, 519
 - organism causing, 179
 - point of entrance, 187
 - precautions, 631
 - predisposing causes of, 294
 - pulmonary, 294
 - disposing of sputum, 295
 - sample meal, menu for, 512
 - sites of infection, 295
 - in adults, 295
 - in children, 295
- Tubes, bronchial, 80
- Tularemia, 296
- Tularemia and psittacosis, 296
- Tumor, definition, 310
 - benign, 310
 - fibroid, 381
 - interstitial, 381
 - malignant, 310
 - submucous, 381
 - subperitoneal, 381
 - what time occur, 381
- Turbidities of urine, causes, 146
- Turpentine, dosage and effect, 18
- Turpentine stupe, 245, 464

- Tympanic membrane, 100
 Tympanitis, 223
 after abdominal operation, 386
 dangers of, 632
 treatment of, 223, 660
 Tympanum, location, 105
 Tympany, 313
 Typhoid and housefly, 189
 and malaria, difference in trans-
 mission, 189
 bacteria cause, 175
 carrier, 290
 Typhoid fever, 284, 285
 alarming symptom, 634
 alarming temperature on, 290
 causative organisms, 183, 639
 causes of, 285
 of intestinal hemorrhage in, 288
 complications in, 284, 632
 due to poor nursing, 289
 convalescent diet in, 514
 one day's menu, 519
 dangerous symptoms in, 286
 diet, 653
 disinfectant precaution in, 289
 excreta, disposition of, 287, 288
 feeding of patients, 286
 hemorrhage, emergency treatment
 of, 289
 incubation period, 285
 intestinal hemorrhage in, 288, 289
 in the neighborhood, 195
 mouth in, 288
 neglect of, 288
 nursing care of, 287
 in country, 195
 pathology, 285
 perforation in, 286, 288, 289
 prevention of infection, 286
 preventive treatment for, 288, 635
 symptoms, 289
 synonym, 206
 Typhoid vaccine, immunity in, 625
 Typhus, 267

 Ulcer, gastric, 257
 peptic, symptoms of, 657
 Ulna, 68, 70
 Ulnar artery, 87
 Ultraviolet light, 457
 Umbilical region, 89
 Unciform, 70
 Unit, caloric, 493
 Unit, in communicable disease ward,
 270
 United States Pharmacopoeia, 28
 Untoward effect of drug, 10

 Upper extremity, bones of, 70
 articulations of, 72
 processes of, 72
 Uraemia, 204, 262
 nursing care of, 262
 symptoms, 262
 Ureters, 145, 655
 functions of, 145
 Urethra, 94
 definition, 374
 female, to obtain specimen of pus
 from, 382
 Urethritis, acute gonorrhoeal, 384
 Urinalysis, 141, 641
 need, of, 146
 terms defined, 641
 Urinary, retention, 127
 suppression, 127
 Urinary system, organs of, 141, 622
 tract, post-operative care, 647
 Urine, 141
 abnormal constituents, 655
 in acute nephritis, 642
 in diabetes, 641
 abnormal findings, 574, 641
 acetone in, 142
 acid in, 141, 641
 albumin in, 143
 Heller's test for, 143
 alkaline, 141, 641
 analysis, importance of, 147
 before and after operation, 144, 329
 bile in, 144
 test for, 144
 catheterization after labor, 426
 causes for suppression, 145
 of turbidities in, 146
 characteristics valuable in diag-
 nosis, 220
 chemical examination of, 142
 chlorides, test for, 143
 composition, 126
 conditions of, for record, 264
 decreased amount, pathological
 causes, 641
 definition, 141
 disease increasing, 144
 disinfection of, 199
 essential points, 146
 examination of, 183
 fermentation test, 147
 findings of, 220
 from female, specimen, 147
 glucose, Fehling's test, 143
 in acute Bright's disease, 146
 in new patients, 146
 in scarlet fever, 284

Urine—(*Continued*)

- incontinence of, 264
 - methods to void, after operation, 332
 - microscopic findings, 141
 - normal amount of, 142, 264, 641
 - characteristics of, 141
 - specific gravity, 142, 641
 - normal constituents, 126
 - normal findings, 641
 - normal reaction, 126, 641
 - how determined, 126
 - observation of, 220
 - of acute cystitis, 147
 - on clinical record, 141
 - output of, 641
 - properties, need of urinalysis, 146
 - quantity of, diminished, 144
 - of increased, 144
 - residual, 144
 - retention after labor, 414, 426
 - after operation, 332
 - before and after operation, 329
 - and suppression, 263
 - with overflow, 263
 - specimen of, 145
 - sugar test for, 141
 - suppression of, 127, 263
 - symptoms requiring careful record, 145
 - to obtain a specimen, 462
 - to void, measures taken, 263
 - twenty-four hour specimen, 263
 - when to disinfect, 199
 - with high specific gravity, 145
- Uriniferous tract, 94
- Urinometer, 142
- Urotropin, 650
 - administration of, 25
 - dosage, 18
 - technical name, 6
- Urticaria, 526
- Usual types, 617
- Uterine sound, uses of, 322
- Uterus, 95, 372
 - after delivery, 410
 - at term, size of, 397
 - carcinoma of, 286
 - changes during pregnancy, 401
 - drugs acting on, 42
 - example, 42
 - function of, 373
 - ligaments, 620
 - location of, 653
 - prolapse of, causes, 381
 - removal of, procedure called, 647
 - ruptured, symptoms of, 661

Uterus—(*Continued*)

- tumors of, fibroid, 381
 - virgin size of, 397
- Uvula, location, 105
- Vaccination, anti-typhoid, 288
 - small-pox, 165, 297, 298
 - when done, 298
- Vaccine, bacterial, 650
 - rabies, perfected by, 640
 - typhoid, 656
- Vaccines, 193
 - autogenous, 194
 - difference from serums, 9
 - how obtained, 297
- Vagina, hemorrhage from, 385
- Vagina, treatment of, 382
- Vaginal bleeding, indication of, 648
- Vaginal inspection, instrument used in, 378
- Vaginal smears, examination of, 183
- Vaginitis, 308
- Vagus nerves, 81
- Valency, 569
- Valve, ileo-caecal, 94
- Valves of heart, 83
 - semilunar, 625
- Varicella, see Chicken-pox
- Varicocele, 309
- Variola, see Small-pox
- Various examples of newer tests, 617
- Vas deferens, 313
- Vegetable kingdom, drugs from, 10
- Vegetables as food, 506
 - classification of, 642
 - containing no starch, 498
 - 5 per cent, 491
 - green, and health, 514
 - indigestible part of, 500
 - laxative effect, 642
 - rich in protein, 644
- Vegetarianism, 499
- Vein, hepatic, location of, 624
 - portal, 86
 - subclavian, 86
- Veins, 120
 - and arteries, differences in the structure, 122
 - and capillaries, intestinal, 93
 - function of, 119
 - gastric, 120
 - jugular, 81
 - mesenteric, 120
 - pulmonary, 81
 - splenic, 120
 - systemic, 81

- Vena cava, 78, 81, 120
 inferior, 85, 120
 superior, 85
- Ventilation, 171
 and heating, 171
 in winter, 172
 of sick room, simple method, 171, 638
 two systems of, 171
- Venereal diseases, 298
- Ventral cavity, 104
- Ventricle, 120
 left, 120
 right, 120
- Venules, 120
- Veratrum, action and dose of, 34
- Vermiform appendix, see Appendix
- Vernix caseosa, definition, 396
 removal of, 662
- Veronal, 14
 dosage of, 19
- Version, 395, 649
- Vertebra, 73
- Vertebrae, largest, 73
 number of, 73
- Vertebral, 68
 column, divisions, 74, 624
 elasticity of, 74
 uses of, 137
- Viable, definition, 375
- Virus, filterable, definition, 187
 disease produced by, 188
- Vision, 131
- Visual apparatus, 114
- Vital statistics, record of, 165
 capacity of adult lungs, 119
- Vitamins, 488, 489, 642
 classification of, 490, 646
 examples, 646
 food containing, 49
- Vocal cords, 117
 how produced, 117
- Voice, loudness of, 117
 qualities in nurse, 552
- Volkmann's contracture, 333, 631
 cause, 333
- Volsellum, uses of, 322
- Voluntary muscles, 76, 128
- Vomiting, 222
 care of patient in, 223
 faecal, indication of, 222
 means to check, 223
 mucus streaked with blood, 222
 of blood, 223
 projectile, 222, 627
- Vomitus, coffee ground, indication of, 222
- Vomitus—(*Continued*)
 examination of, 183
 in intestinal obstruction, 223
- Von Pirquet test, given in, 640
- Vulva and cervix, dilatation of, in labor, 408
- Wald, Lillian, 561, 662
- Walls of capillaries, 125
- Ward, pediatric, air in, 172
- Warmth, action on bacteria, 181
 of body, 160
- Wash-basins, cleaning of, 174
- Washes, antiseptic, 25
- Wassermann test, 190, 640
- Waste products of body, how eliminated, 126
- Water, 170
 albumin, preparation of, 464
 boiled to render more palatable, 506
 boiling point, 506
 temperature, 645
 changes in the body, 506
 composition of, 506
 contamination of, sources of, 170
 daily amount for adult, 638
 diseases borne by, 168, 170
 drinking, how polluted, 171
 sources of contamination, 171
 food value, 492
 for infant, 420
 freezing point, 505
 temperature, 645
 how protected, 168
 infected, diseases caused by, 168
 made synthetically, 575
 methods for purifying, 638
 necessary to the system, 506
 physical properties, 575
 pure, 170
 purest, in nature, 576
 purified, 506
 suspicious drinking, how treated, 171, 506
- Water-borne diseases, 168
- Weakness, characteristic cry of, 459
- Weaning, normal, 441
 reasons for, 441, 628
- Webbed fingers, 309
- Weight, average gain, first year, 627
- Weights and measures, 57
 apothecaries, 58
 symbols of, 58
 metric, 58
 wine measure, 57
- Weischelbaum's diplococcus, 182
- Wet sheet in contagious diseases, 274

- Wharton's jelly, 395
Whey, 645
Whiskey, 4
 technical name of, 4
White blood cells, 620
Whooping cough, complications, 298,
 633
 how transmitted, 272
 regime in, 474
 synonym, 207
Widal test, 190
 given in, 640
 object of, 190
Willis, circle of, 103
Wine of ipecac, 6
Work, ward, routine, 246
Worm medicines, 13
 for intestinal round worms, 13
 for tapeworms, 13
Wound, definition, 311
 healing by granulation, 352
 infection, exterior, prevention, 352
Wounds, 350
 abdominal, dressing required, 320
 aseptic, 350
 Carrel-Dakin treatment of, 351
 classification, 350
 cleansing, 351
 contused, 350
 drainage in, 351
 first aid care of, 350
 gunshot, 350
Wounds—(*Continued*)
 healing by first intention, 350
 by second intention, 350
 how infected, 351
 incised, 350
 infected, 351
 local, 351
 lacerated, 350
 non-penetrating, 350
 open, 351
 penetrating, 350
 poisoned, 350
 precautions when removing dress-
 ings from, 320
 punctured, 350
 septic, 350
 subcutaneous, 350
 suppurating, 351
 with tetanus, 352
Wright's stain, 176
Wrist, bones of, 70
X-ray, 309
 treatments, danger signals in, 387
 when used in treatment of cancer,
 387
Yeast, 180
Yellow fever and mosquito, 190
Young's rule, dosage for children, 16
Youth, 440
Zinc, poisoning, antidotes, 46
 symptoms, 46

Our Lady, Our Queen, Our Mother.

In the name of Jesus, ^{and} for the love
of Jesus.

We implore thee to take our cause in
hand ^{and} to grant it good success.

Our lady, Seat of Wisdom

Pray for Us.

Say this prayer nine
times.

2. 000
S. B. 29

- 1921

1/2. 1/2

